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VOL. XXVI

January, 1919

No. 4

“The Development of Public Works of Every Sort Should Be Promptly Resumed”—President Wilson

THE ordinary and normal processes of private initiative will not, however, provide immediate employment for all men of our returning armies. Those who are of trained capacity, those who are skilled workmen, those who have acquired familiarity with established businesses, those who are ready and willing to go to the farms, all those whose aptitudes are known or will be sought out by employers, will find no difficulty, it is safe to say, in finding place and employment. But there will be others who will be at a loss where to gain a livelihood unless pains are taken to guide them and put them in the way of work. There will be a large floating residuum of labor which should not be left wholly to shift for itself.

"It seems to me important, therefore, that the development of public works of every sort should be promptly resumed, in order that opportunities should be created for unskilled labor in particular and that plans should be made for such developments of our unused lands and our natural resources as we have hitherto lacked stimulation to undertake."

"I particularly direct your attention to the very

practical plans which the secretary of the interior has developed in his annual report and before your committee for the reclamation of arid, swamp and cut-over lands, which might, if the states were willing and able to co-operate, redeem some 300,000,000 acres of land for cultivation.

"There are said to be 15,000,000 or 20,000,000 acres of land in the West at present arid, for whose reclamation water is available, if properly conserved. There are about 230,000,000 acres from which the forests have been cut, but which have never yet been cleared for the plow and which lie waste and desolate. These lie scattered all over the Union. And there are nearly 80,000,000 acres of land that lie under swamps or subject to periodical overflow or too wet for anything but grazing, which it is perfectly feasible to drain and protect and redeem.

"The Congress can at once direct thousands of the returning soldiers to the reclamation of the arid land, which it has already undertaken, if it will but enlarge the plans and the appropriations which it has intrusted to the Department of the Interior."—President Wilson in his address to Congress, December 2nd.

Build at Present Prices

PRESENT prices of labor and materials used on the construction of public works are above normal, asserts the editor of "Municipal and County Engineering" (Chicago), in his current issue. The level of prices will remain high, perhaps for a decade (if history repeats itself). What, then, is to be gained by further postponement of construction projects, now that restrictions have been removed? Nothing, absolutely nothing! But such further postponements will do much harm.

Construction provides the only understood method of taking up the industrial slack due to the abrupt ending of the war. A nation-wide movement at this time to accelerate and encourage the making of public improvements will stabilize labor conditions by creating new demands for labor and by readily reabsorbing labor released from the suspended war industries and by the demobilization of the army and navy.

Prosperity requires the profitable employment of labor. A period of unemployment is a period of panic, of unrest, of bolshevism, of all manner of distressing excesses.

Certain communities with only their own undertakings in mind may further postpone the construction of much-needed and long-deferred public works, in the expectation that lower prices of labor and material will soon prevail. Money saved in this way will be worth only a fraction of its cost. The direct money loss to the community and to every individual, due to the unemployment of labor, will far outweigh any possible saving effected by waiting for lower prices to return.

It has been at least ten years after every other great war period before prices returned to their pre-war level. What American city wants to wait another ten years for improvements it needs now?

Before the war public improvements were very cheap. They seem expensive now only in comparison with pre-war standards. Such improvements are cheap at present prices. When benefits are considered no community can afford to postpone improvements now that the emergency has passed.

We are free to choose between panic and prosperity.

The surest way to bring on a panic is to adopt a do-nothing, wait-and-see policy.

The one absolutely sure way to avoid a panic is to give employment to labor on construction at present prices.

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U. S. Asks for More Hog Houses

FARMERS and pig-club members are urged by the Department of Agriculture to give earnest attention to the matter of adequately housing their swine, in order that they may materially increase pork production to meet the needs of American soldiers and the Allies for pork and pork products. Serious decrease in hog marketings has aroused the determina-

tion upon the part of the government officials to see that something is done to remedy the situation.

It is pointed out that proper housing will be an important factor in the proposed increased swine production, as it will reduce the amount of food consumed and will prevent losses from exposure, especially with the early spring litters. The situation in the lumber market is such, it is declared, that the matter of providing adequate housing for swine should not be difficult.

In some sections of the country, the department says, the farmers build larger and more expensive houses for their swine than are necessary, but in a great many places too little attention is given to the subject.

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Planting of Black Walnut Urged

EMPHASIS is laid upon the necessity for planting more black walnut trees throughout the United States by the Department of Agriculture in a bulletin just issued. It is declared that black walnut, which is one of the most profitable of woodland pasture trees, is rapidly becoming scarce because of the important part it has played in the war.

The strong demand for the wood in the manufacture of cabinet materials, caskets, musical instruments and furniture is the prime cause of the interest on the part of the department. An elaborate set of directions as to how to plant these trees has been arranged.

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Positions Sought for Army Officers Now Leaving Camps in U. S.

THE United States Employment Service issued an appeal to employers in need of technical and other highly trained men to take on qualified men from the commissioned and enlisted ranks of the army who are now leaving the camps.

Hundreds of officers, many of the higher ranks, are asking the camp representatives and Federal directors of the Federal Employment Service for the States to assist them to obtaining new employment. There also are large numbers of enlisted men qualified for professional and technical positions who are leaving the army without having positions in sight.

Among the men of this high type applying at the Federal Employment Service are engineers and other technical men, executives, chemists, statisticians, purchasing agents, employment managers, cost accountants, etc.

All employes wishing to get in touch with these men should communicate with the professional section, United States Employment Service, Department of Labor, Washington, D. C.

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PRICES will not soon come down. No use waiting. Get busy now on public buildings and private work. The war machine is stopping. Help start the Great Wheel of peace time industry. Plan and build now.

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"Moderate" Reduction in Iron and Steel Prices

MANUFACTURERS' MEETING IN NEW YORK AUTHORIZES THE GENERAL COMMITTEE TO TAKE SUCH ACTION AT WASHINGTON

ACCORDING to "The Iron Age" there is to be a moderate reduction immediately in the price of steel. This is the stimulant which the building industry has been awaiting. In its issue of Dec. 12 this authoritative iron trade paper comments on the situation as follows:

"At a meeting attended by 125 iron and steel manufacturers, held at the Waldorf-Astoria in New York, Monday, Dec. 9, it was decided by practically unanimous vote to make a reduction in prices of iron and steel products. The formal action taken was the reference of the whole matter to the general committee of the American Iron and Steel Institute with power. Since the committee thru its chairman, E. H. Gary, had already reported to the meeting that it favored some reduction in the existing official schedules of maximum prices, the action amounted to a committal of the manufacturers present to a new and reduced price basis.

"The meeting lasted more than 3½ hours and was devoted to a thorough discussion of the existing situation. Judge Gary emphasized in his address the necessity for maintaining wages and this sentiment was reiterated in the discussion. Judge Gary's argument was that present wages are reasonable and should be maintained unless costs of living are reduced; that in time cost of production would be lowered but not to former levels; that the steel industry should aid in the stabilization of business; that the next five years would be the most progressive, prosperous and successful in the country's history and that while there might be some temporary losses to manufacturers, there should be no danger of serious depression.

"At this writing the new prices have not been announced, but there is an expectation that pig iron will be reduced \$3 a ton, some heavier forms of finished material \$5 a ton, and some lighter forms probably \$10 a ton. The meeting of Monday was unanimous in the expression that wages should not be touched; that manufacturers should first sacrifice some of their war profits, if necessary, and that wage reductions should not come in any event until there

has been reductions in the cost of living."

It was expected that the Price Fixing Committee of the War Industries Board would adopt or at least indorse this new schedule. But at their final meeting with the steel and iron industry, Dec. 11, the chairman of the committee was very careful to avoid anything that could be interpreted as a government fixing of prices for the period beginning Jan. 1.

The reduced iron and steel prices to take effect Jan. 1, prepared by the committee of the American Iron and Steel Institute, were brought to the session of the Price Fixing Committee, but Judge E. H. Gary, chairman of the steel committee, did not get an opportunity to read them. They were given out later by the steel representatives, and it is reported that they will be the price list of the United States Steel Corporation as well as of most of the independent producers.

Later reports from the iron trade centers indicate that the pig iron sellers generally are accepting the \$3.00 cut in price. In finished materials, there is very little buying at the new schedule. This causes no disappointment, for it was not expected, during the holiday season with so much uncertainty existing for various reasons as to the future, that buying would be active. There is a fairly good demand for tubular

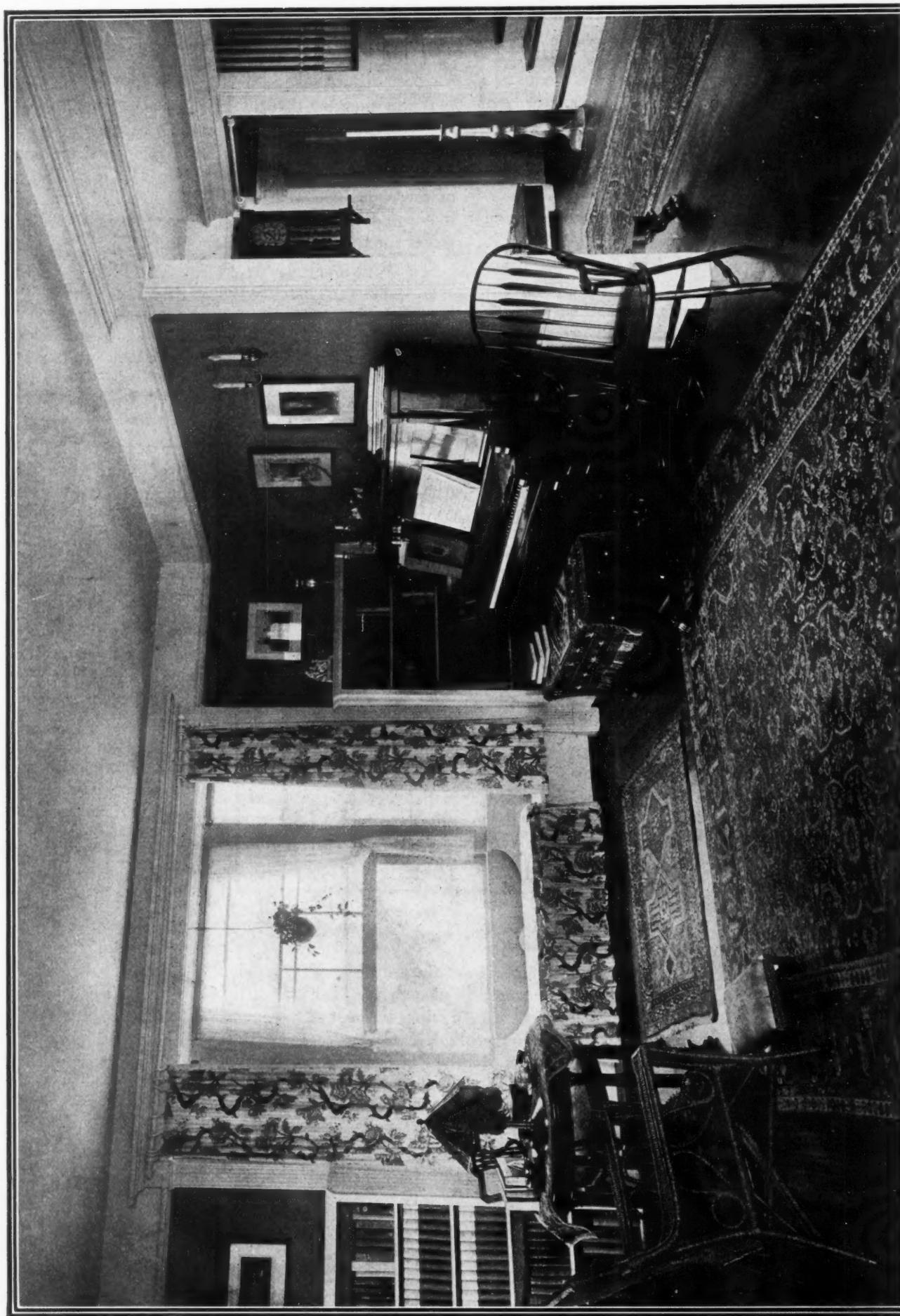
goods with almost none for structural shapes.

It is very evident that we are at the end of the government fixed price era. Jan. 1, 1919, sees the dissolution of the War Industries Board, which had jurisdiction during the war.

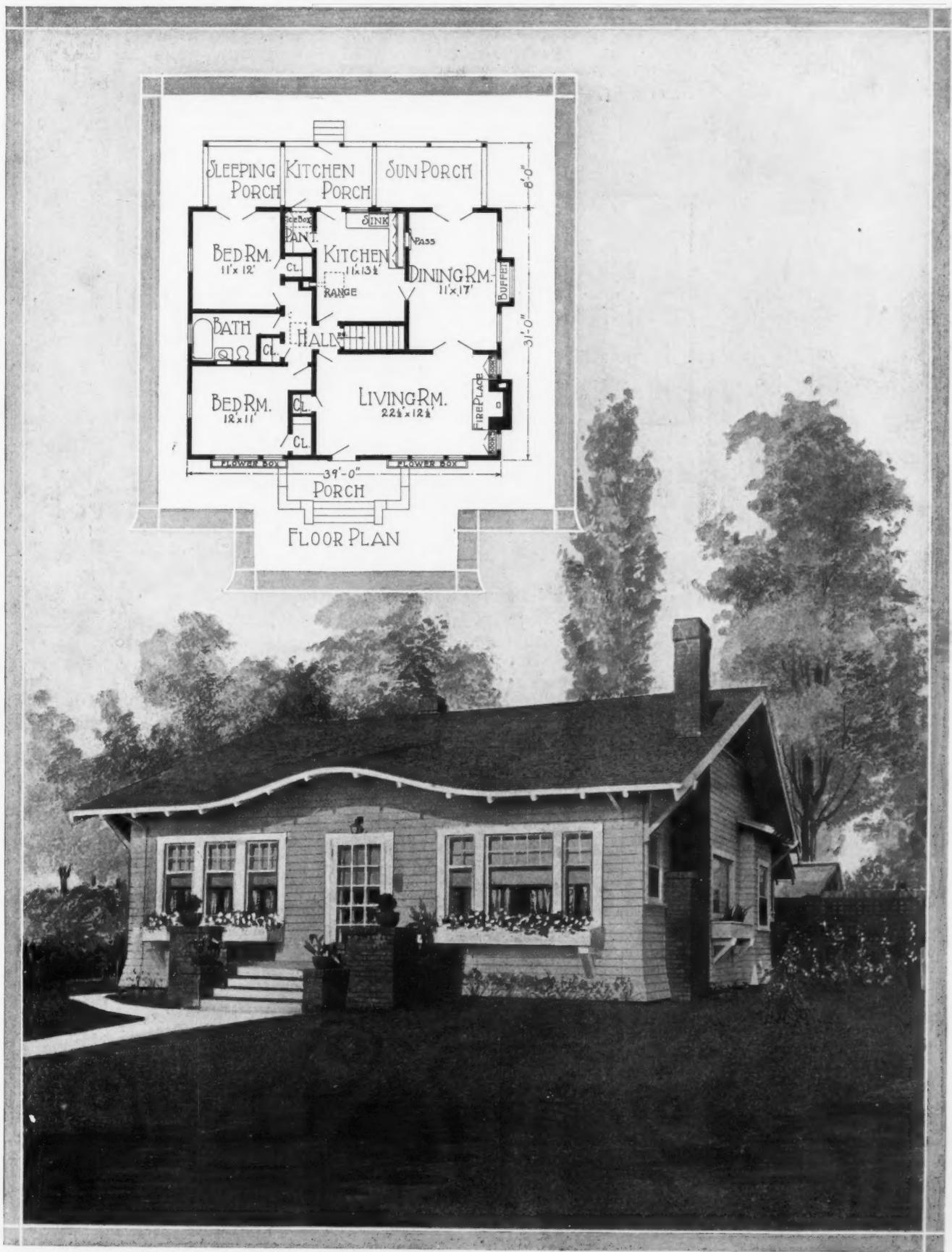
"No new price agreements will be entered into by the Price Fixing Committee, and all former prices heretofore fixed will be allowed to expire by limitation," Chairman Brookings, of the Price Fixing Committee, stated, following the final meeting with the iron industry and subsequent meetings with the zinc, copper and other metal producers.



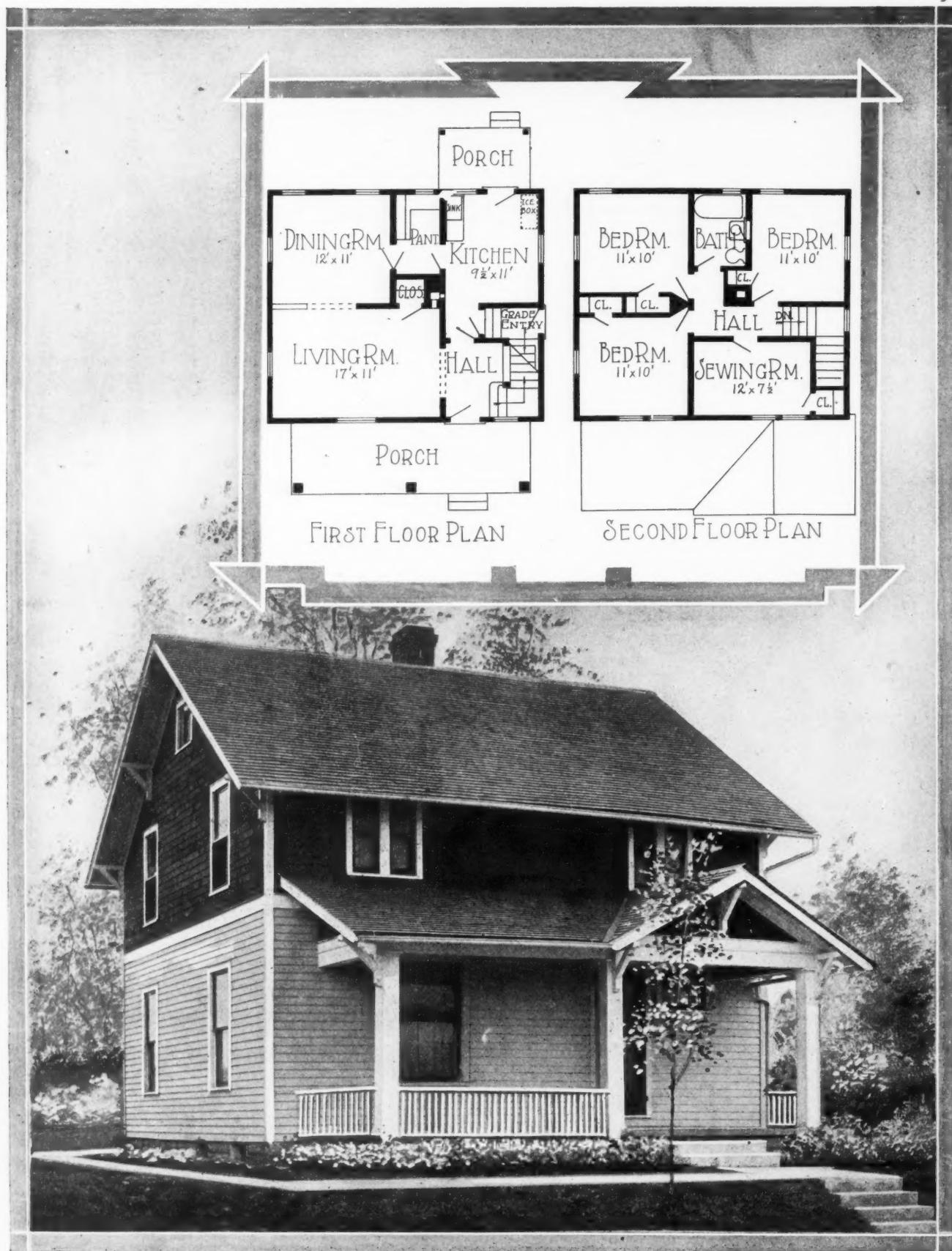
JUST as the motor truck was first called upon to meet the "wartime" transportation demands made upon industrial America, so it will be first to help solve the extraordinary problems of "peace times."



A Living Room Made Cherry with a Triple Window Bay with Built-In Seat Flanked by Open Book Shelves. The Finish Is White Enamel and Mahogany.

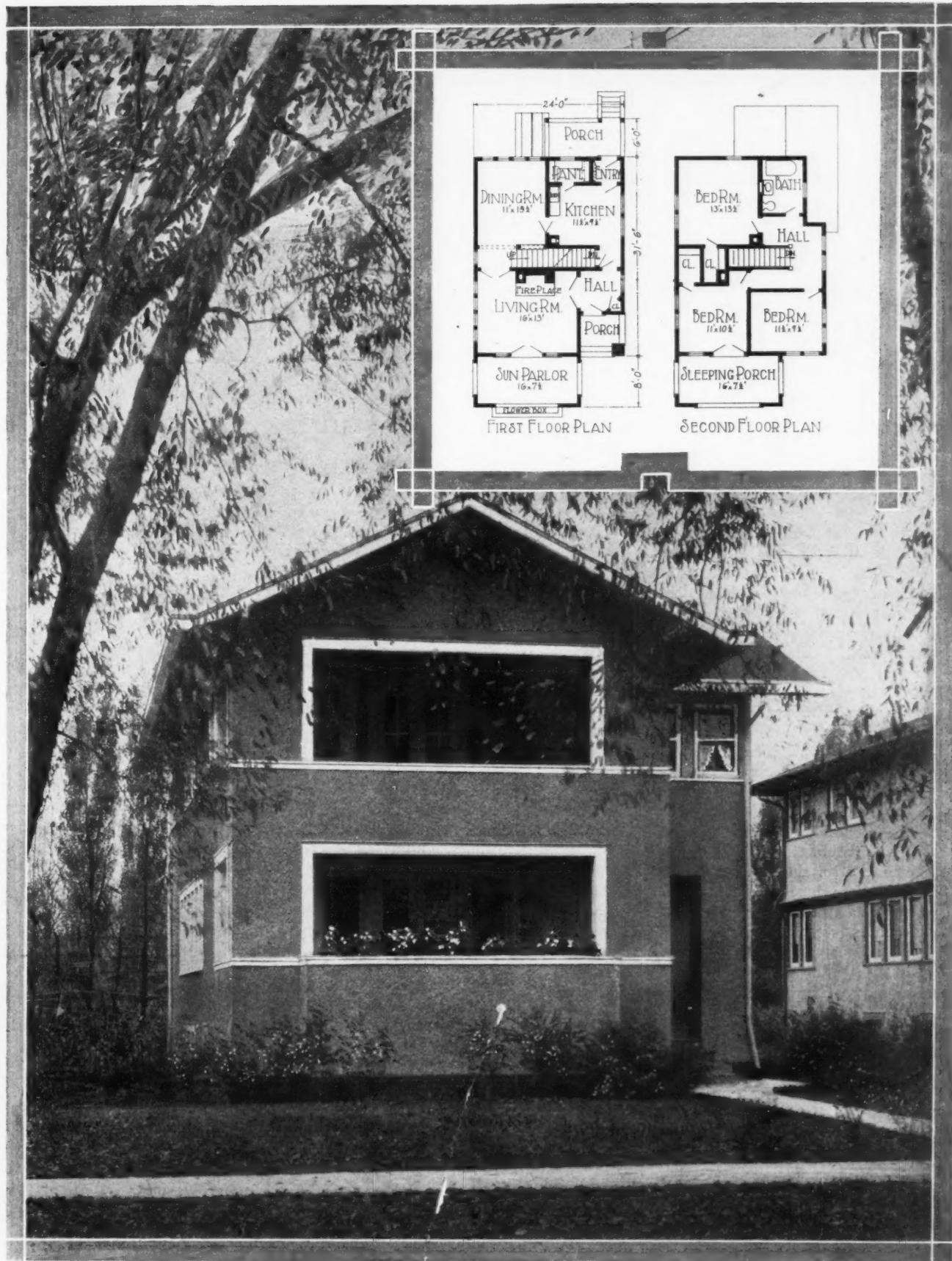


THE WHITE BUNGALOW, a new note in home architecture. This might well be called the Dutch Colonial of bungalows. In its balanced simplicity and grace of roof line, this bungalow will be to the middle west—where lots are wider—what the two-story Dutch Colonial is down east.



A PRACTICAL SEVEN-ROOM HOME. In size, 28 by 23 feet on the ground; this house is compact and economical, at the same time containing a surprising amount of usable living space very conveniently arranged. All the features of the seven-room modern home are included.

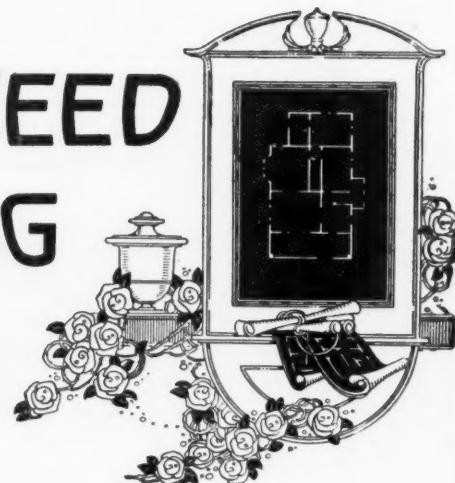
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A CITY HOUSE OF STUCCO. This design measures 24 feet in width by 39 feet 6 inches long, not including the rear porch projection. It is a typical modern city design. Liberal use is made of double doors, full glazed, between the several rooms. The stairs, partly open to the dining room, make an interesting detail. Six good rooms with bath are provided.



GUARANTEED BUILDING PLANS



A Well Planned California House

By Charles Alma Byers

HERE is a freedom, a distinctiveness about the home architecture of California that is truly delightful. A rather common fault of it, however, generally speaking, is that so much of it is suitable only for a mild climate, such as that state possesses. Now and then, nevertheless, one comes upon some specimen of California architecture that, in structural lines and construction durability, is particularly adaptable to all localities, and when such a house is found one usually beholds a home that is especially pleasing and original in its appearance from both an outside and an inside point of view. The house here shown offers such an illustration.

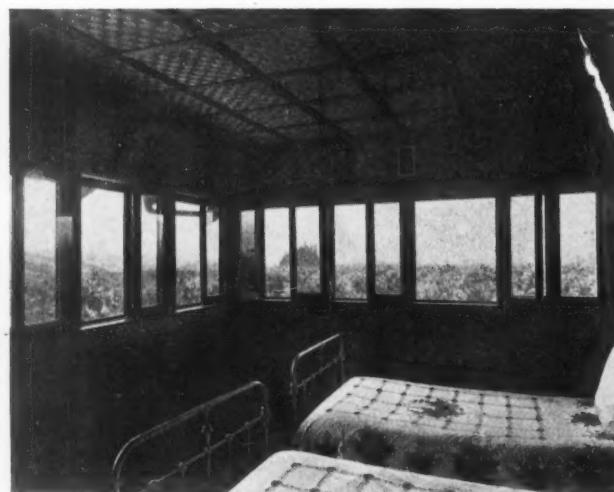
This house constitutes a home that is indeed charming in every particular. It possesses a certain individuality of style, and is at the same time quite simple and dignified as viewed from the street. It is excellently arranged on the inside, and contains many features that invariably

prove a delight to the genuine home-lover. All in all, it is a very common-sense house, and one that can be duplicated anywhere with complete satisfaction.

The house is full two stories in height, but by a rather ingenious arrangement of the room lines it is made to seem comparatively low, somewhat suggestive of the bungalow. The wide overhangs in the eaves and gables help to give this impression also, as does the treatment of the outside walls; yet in California the house would by no means be termed a bungalow in any sense of the word. The roof is rather mild in its degree of pitch, and the covering is of shingles. The walls are weather-boarded to a height on line with the tops of the first story windows, and from there upward they are sided with sawed redwood shingles, a treatment that gives a very charming effect. With the exception of the trimming about the windows,

which is done in white, the exterior color scheme consists of dark browns. The foundation is of concrete, but the exposed masonry work, consisting of chimneys and porch piers and parapet, is of pressed brick. The walks, steps and driveway, and the flooring of porch and terraces, however, are of cement.

One of the charming features of the outside of this house is the broad front porch, or veranda, with its attendant features. The porch proper is ten by thirty-six feet in dimensions. At one end there is a terrace, or uncovered area, ten by twelve in size, and at the other end it terminates in an excellent *porte cochere*. Steps lead from the porch to this *porte-cochere*, and by means of this feature it is possible to enter or exit from the car, in any kind of weather, without passing from the protection of the house's roof. Incidentally, in this connection, notice should be taken of the construction of the porch and



The Screen Room or Sleeping Porch on the Second Floor.



The Reception Hall Looking Into the Living Room.

Interior Views of the California House Designed by E. B. Rust, Architect.



A Well-Planned California House, E. B. Rust, Architect.

porte-cochere pillars, shown in one of the accompanying illustrations, for to their excellent design is due much of the charm of the front appearance. Above the entrance there is a delightful little second floor balcony, and in the rear, on the ground floor, is a charming partly enclosed retreat, in the open air, in the form of another small terrace.

If such is possible, the interior of this house is even more interesting than the exterior. The arrangement is particularly good, and a careful study of the accompanying floor plans is well merited. There is a square reception hall, from which rises the main staircase to the second floor. To the left is a large living room, with a broad open passageway intervening, and to the right is the dining room, shut off therefrom by sliding glass doors. Back of the living

room is a small library, where again glass doors are used. It will be observed that, if the occasion invites, all of this part of the house can be converted into virtually one large room, giving a spaciousness that is especially desirable when entertaining.

The general color scheme of all of these rooms is one of harmony. The woodwork of the dining room is of genuine fumed oak, and, while in the remainder of these rooms Oregon pine is used, it is treated to produce a harmonizing appearance. In the reception hall and living room the ceilings are coved, and in the dining room and library they are beamed. The walls of the latter two are finished with a paneled wainscot, and are embellished with a tapestry

frieze that intervenes between the top and the wainscot and the plate rail above. In the reception hall and living room the walls are plastered only and are tinted in a light chocolate color, while just at the beginning of the cove is a stenciled frieze of dignified pattern.

The dining room contains an excellent buffet, which, with the china closets at either side, with a small window above, extends across the entire outside end wall. The living room possesses a fireplace, with a stone mantel, and in the library is another fireplace, with a mantel of chocolate colored tile. At either side of the latter is a low built-in book case, with a tiny window above. The library, since it can be shut off from the living room, is an especially cozy room for reading and study. In a nook of the stairway hall is found a station-



Interior Arrangement of California House.



This Suburban or Country House Employs Rough Field Stone in a Most Artistic and Distinctive Manner.



A COUNTRY HOUSE WITH FIELD STONE PORCH.

The photograph and plans above illustrate a country place or suburban home of unusual charm and distinction. The house itself is not large—32 by 38 feet on the ground and containing six rooms. The massive porch, however, built of rough field stone, gives this building an appearance of massiveness and size that is quite surprising.

Where stone of this character can be had, there are always stone masons skilled in the execution of rough art stone work of this kind. Certainly nothing is more appropriate for a snug suburban or country house.

The interior of this design is in keeping with the massive exterior form. Altho it is really a small house, the impression as one enters is of great spaciousness. The central reception hall opens each way thru wide cased openings into the living room and dining room, respectively. The kitchen is of good size. There is a bedroom 12 feet square, and a lavatory on the first floor. Upstairs are two large bedrooms and bathroom.

ery seat, completing the built-in features of this part of the house.

Between the dining room and the kitchen intervenes an excellent pantry, with a draught cooler, cupboards and other features. The kitchen contains all of the customary conveniences, besides a disappearing ironing board, as well as a hood for the range. In the rear of the kitchen is the usual screened porch which possesses a lavatory and a storage closet, and from which descends the stairway to the basement.

A small breakfast room, with French doors leading to the rear terrace, comprises the remaining first floor room. From this room also ascends the back staircase to the second floor, and in it is located another artistically designed buffet.

The pine woodwork of this room is stained a soft olive-green shade. The lower part of the walls is paneled with basket work, with a plate rail above, and this paneling is stained to correspond with the woodwork. The woodwork of the kitchen and pantry is crammed white, and the hard-finished plaster wainscot of the former is likewise enamored. Oak flooring is used in all of the first floor rooms, while the flooring of

the second floor rooms is of maple.

On the second floor are four inside bedrooms, a screened sleeping room, two bathrooms and a small sewing room. Each of the four bedrooms has one or more closets. All of the inside rooms have white enameled woodwork, and the walls of the bedrooms are papered. The woodwork of the screened room, however, is stained a light olive-green color, and the basket work used to cover the ceiling and to create the frieze is similarly colored. The lower part of the walls is battened to give a paneled effect. Two entire walls are studded with casement windows, and by them the room can be flooded with as much fresh out-door air as any one can wish for.

Underneath the rear of the house is a basement, twelve by fourteen feet in dimensions, which is walled with concrete and floored with cement. Here is located a hot-air furnace to provide heat to the rooms.

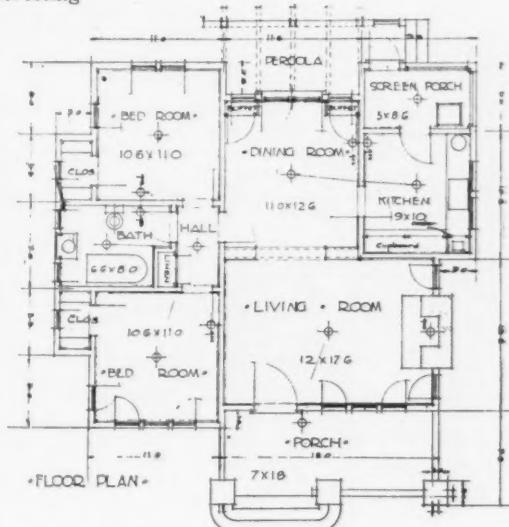
This attractive and conveniently arranged house is located in Los Angeles, Calif., and was designed by E. B. Rust, an architect of that city. It is warmly and durably constructed throughout, and is of such design and construction as to be adaptable to any locality. It was built at a total cost of approximately \$7,500.

A Charming 5-room Bungalow

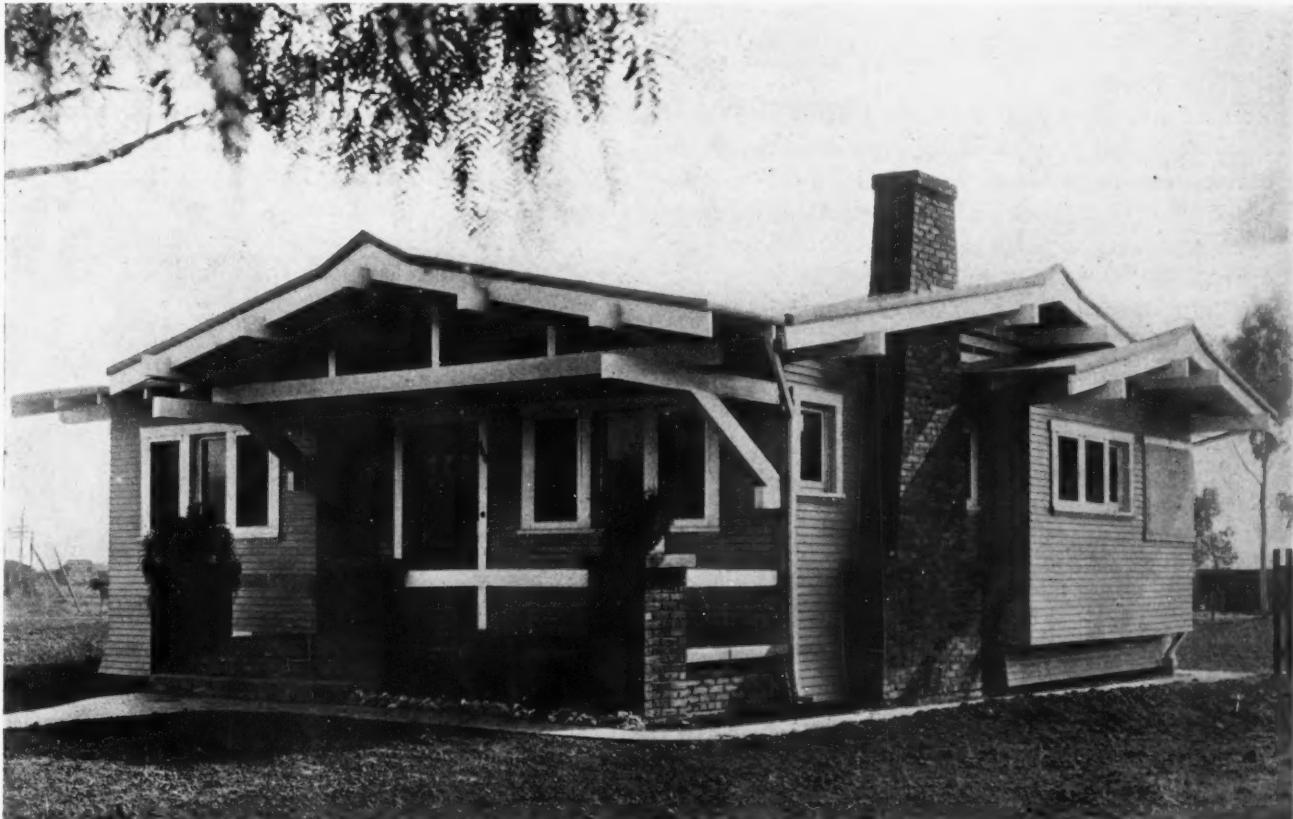
As delightful outside features, this little bungalow possesses both a front porch and a rear pergola, both floored with cement. The outside walls are covered with narrow re-sawed siding, painted a light gray, and the trimming is done in white. The masonry work consists of brick, and the roof is of a gray composition. The manner in which the roof of the front porch is supported by brackets constitutes an interesting detail.

The front door, which is of oak, opens directly into the living room, and half buttresses, with built-in bookcases, separate this room from the dining room, while a pair of French doors open from the latter onto the pergola in the rear. The other rooms are the kitchen, bath room and two bedrooms. The living room fireplace is constructed of tan-colored art brick, and the woodwork of this room and the dining room is of pine, treated to imitate Flemish oak, while the floors are of polished oak. The pine woodwork elsewhere is enam-

eled white, and the floors are of pine. The dining room has a built-in china cupboard at each side of the French doors leading to the pergola; the kitchen is exceptionally well equipped, and each of the bedrooms has a large closet, while a linen closet is a feature of the short connecting hall. This bungalow was built in Los Angeles, Calif., a few years ago, for \$2,250, exclusive of a basement or furnace. It was designed by R. O. Young, architect, of that city.



Arrangement of 5-Room Bungalow.



A Charming 5-Room Bungalow, Designed by R. O. Young, Architect.

Improved Southern Construction

HOW TO BUILD A COMFORTABLE INEXPENSIVE SOUTHERN COTTAGE

By C. Bryant Schaefer

ACANADIAN carpenter recently wrote a southern agricultural journal inquiring regarding the probability of finding employment in the South. Here was probably an opportunity for securing a cautious, thinking man for the South; a person capable of making a place for himself. We all have to do that sooner or later. But the reply published by the editor was that he should not come unless he had a job engaged.

Had this inspiring carpenter been told—as he should have been—that the South is full of resources and in



need of men capable of developing them, and that the country is being heralded to newcomers who would clamor for his products, he would then have understood conditions, and, by drawing on his experience with suitability to Southern circumstances, have made good.

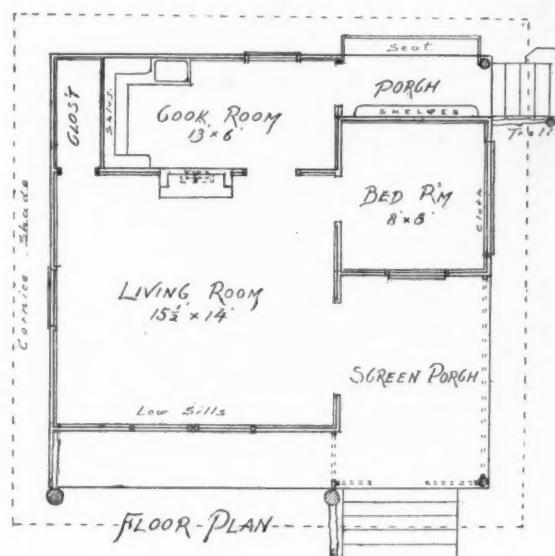
Light construction such as carpentry is especially suitable for mild climates. Heavier materials often develop objectionable qualities. Even the presence of cracks in joints is hardly objectionable, as in the North. This indifference to the opening of joints by seasoning, however, has led to a clumsy board construction with an unnecessary imitation of Northern framing methods. Sash and other millwork are made so small, to reduce the expense of freighting from a long distance, that the result is an ice-house looking affair, such as might be sought in the winter regions. Cottages of this sort are of the kind that do not get into print, and neither satisfy nor attract. They are only discovered by finding on the spot—the successors of the log cabins. And some day, as with the log cabin, the heroism of those who endured the board houses will be the subject of song and story.

The southern cottage wants to be open, breezy and a good rain shedder. There should be fewer rooms,

since much time of the occupants can be spent in the open air. The construction should be fit and not an imitation of the more pretentious mansion. The importance of the southern home is more in the domestic development of the yard and the building of many accessory conveniences. The ingenious mechanic who appreciates this and throws his lot in with the people of his adoption will find the right way with benefit to his neighbors and profit to himself.

This unfitness of present popular structural ideals has hampered manufacturing developments. Perhaps it accounts for the backwardness of the South, for manufacturing plants cannot be developed in these uncertain conditions. The result has been that the discarded plants of the North have been taken over by the South.

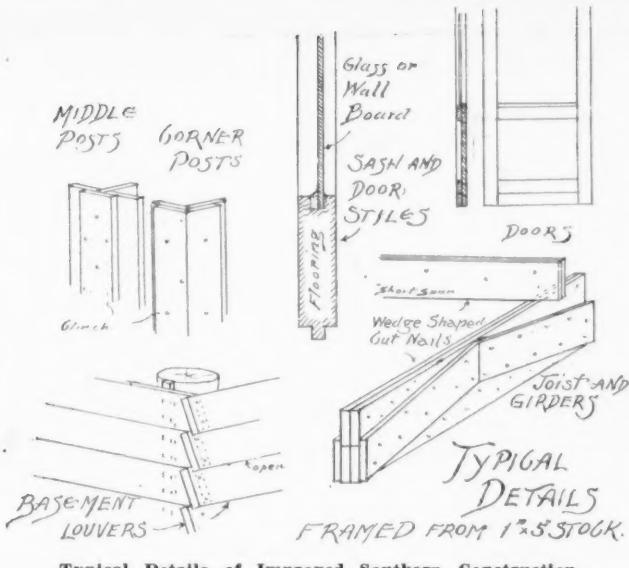
An instance of this is seen in the rough lumber saw mills located where new settlements are growing up. They turn out $2\frac{1}{2}$ by $4\frac{1}{2}$ -inch studding that can be dressed to 2 by 4's with the old-fashioned accuracy, but which now in the North often come $1\frac{3}{4}$ by $3\frac{3}{4}$ -inch in the rough; joist and other lumber similarly; $2\frac{1}{2}$ by $8\frac{1}{2}$, instead of $1\frac{3}{4}$ by $7\frac{1}{2}$, and boards over an inch in thickness, instead of less. A $6\frac{1}{2}$ by $1\frac{1}{4}$ by 10-foot 0-inch board from these mills is large enough for studding in small houses. But instead, the large and clumsy article is used to make a frame where the up and down sheathing is stiff enough to be self-supporting. Sometimes the latter frankly supports the would-be bracing itself.



The Space is Divided Into Four Rooms.

How to Build a Southern Cottage

31



Typical Details of Improved Southern Construction.

In regard to the many artistic manufactures of the North, roofing, glass, hardware, decorations, and so on, it is better to order from a distance than await the installment of machinery for similar manufacture in the South.

A calculating carpenter can reconcile the proportions of a cottage with the limited capacity of the neighboring mill.

The plan and dimensions have to be studied out beforehand. That is where the brain work comes in. He is paid for that—by the advantage of economy and absence of waste.

The man who avoids suffering in his mind works by rule of thumb. He boards up the house all around like a box, then he cuts holes thru for the openings. He orders lumber as fast as he finds needful. When thru, the pieces left over cover the ground all about the house. And the house itself looks like if standing on four corner posts, thick as a barrel.

The building can have lighter supports and more of them, and then smaller girders. The lighter material is also more easily handled.

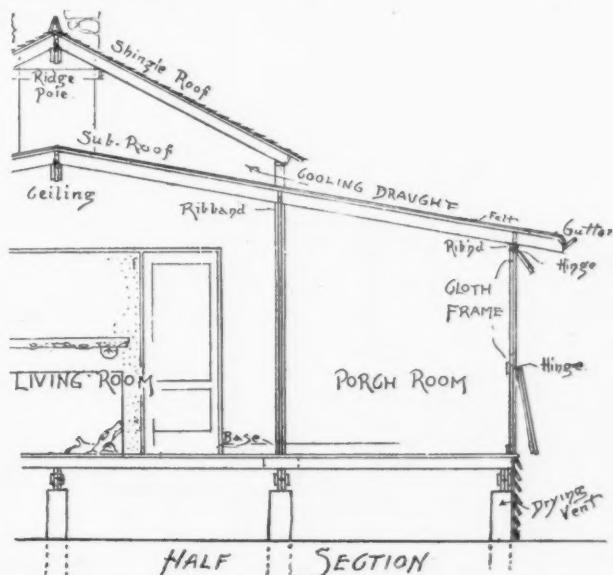
Make the girders of good boards spiked together with cut nails, having a seat on both sides to hold with

and wedge shaped to compress the fiber beyond shrinking—common iron nails.

Do not try to imitate some of the good things of olden times without their necessary adjuncts. This method of construction was devised on the treeless prairies of the Western States a quarter of a century ago. Heavy girders more than 10 by 12 inches were built up on the spot, the transportation cost of solid beams being prohibitive. Besides the result was said to be more reliable because the quality of the heart was known to be good.

Joists and uprights can be furnished in the same manner.

With good paper underneath, one layer of sheathing is sufficient. Shingles can be laid on strips with spaces between.



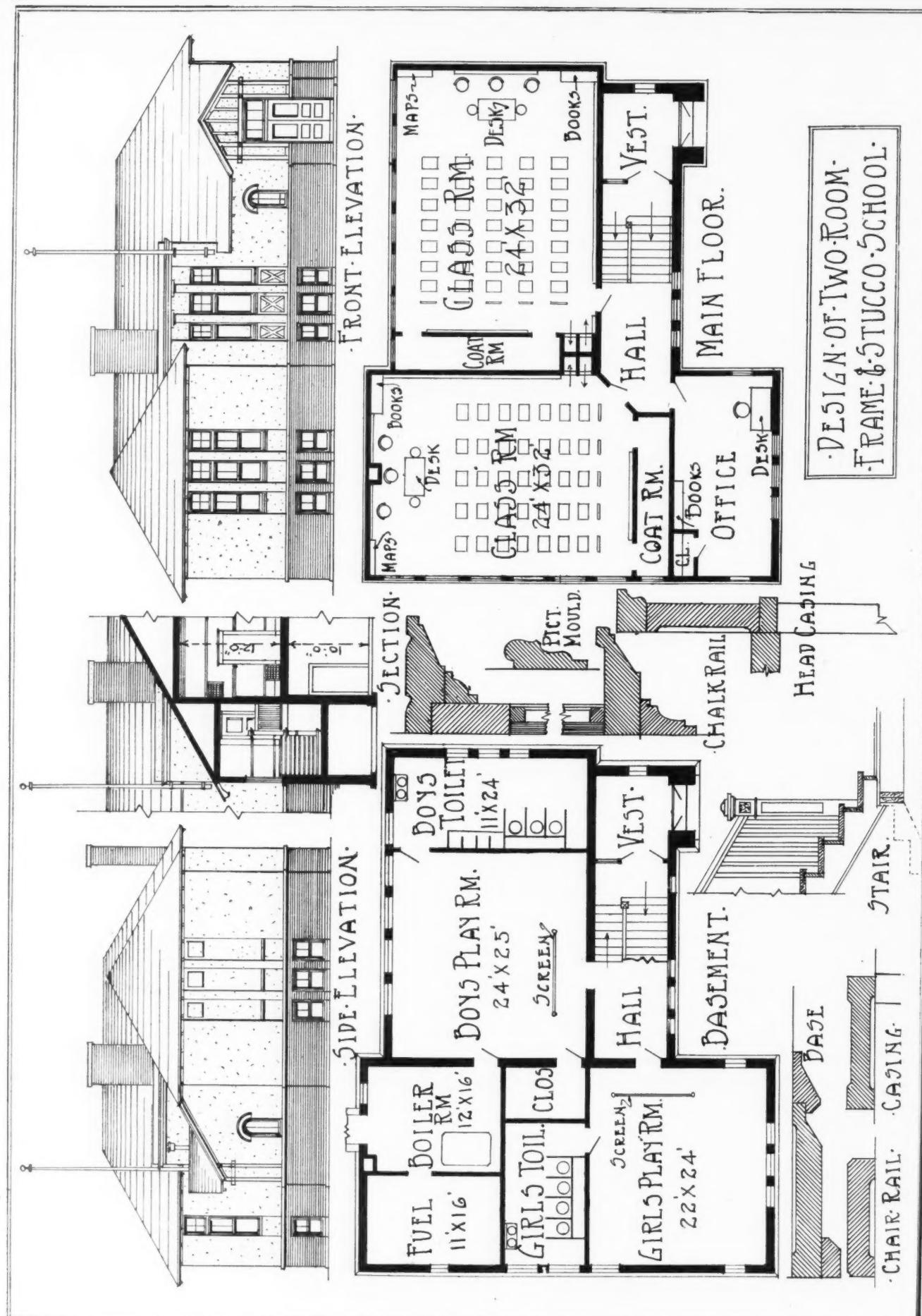
Section Thru Improved Southern Cottage, Showing Ventilation.

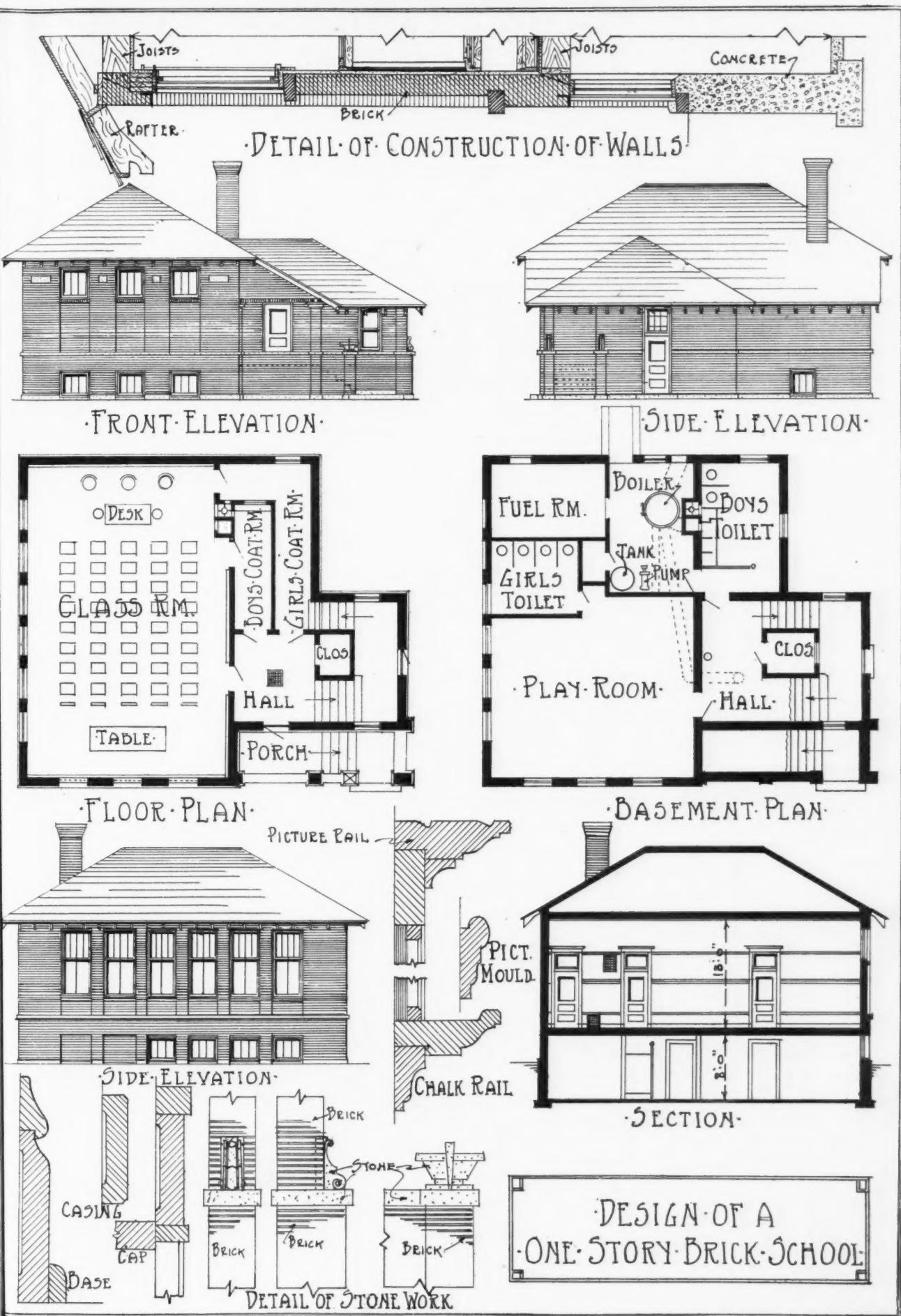
Some of the partitions can be single instead of double plastered. Remember that spaces between our partitions were devised to make them non-conductive of different temperatures which might obtain on either side, a matter of little consideration in the uniform temperature of the South. Similarly not all of the partitions need extend to the ceiling. This is especially desirable on one side of a little room, and avoids

(Continued to page 122)



The Primitive Southern Cabin Had Little to Recommend It.





AMERICAN BUILDER BUILDING PLANS



Blue Prints of Modern Six Room Residence

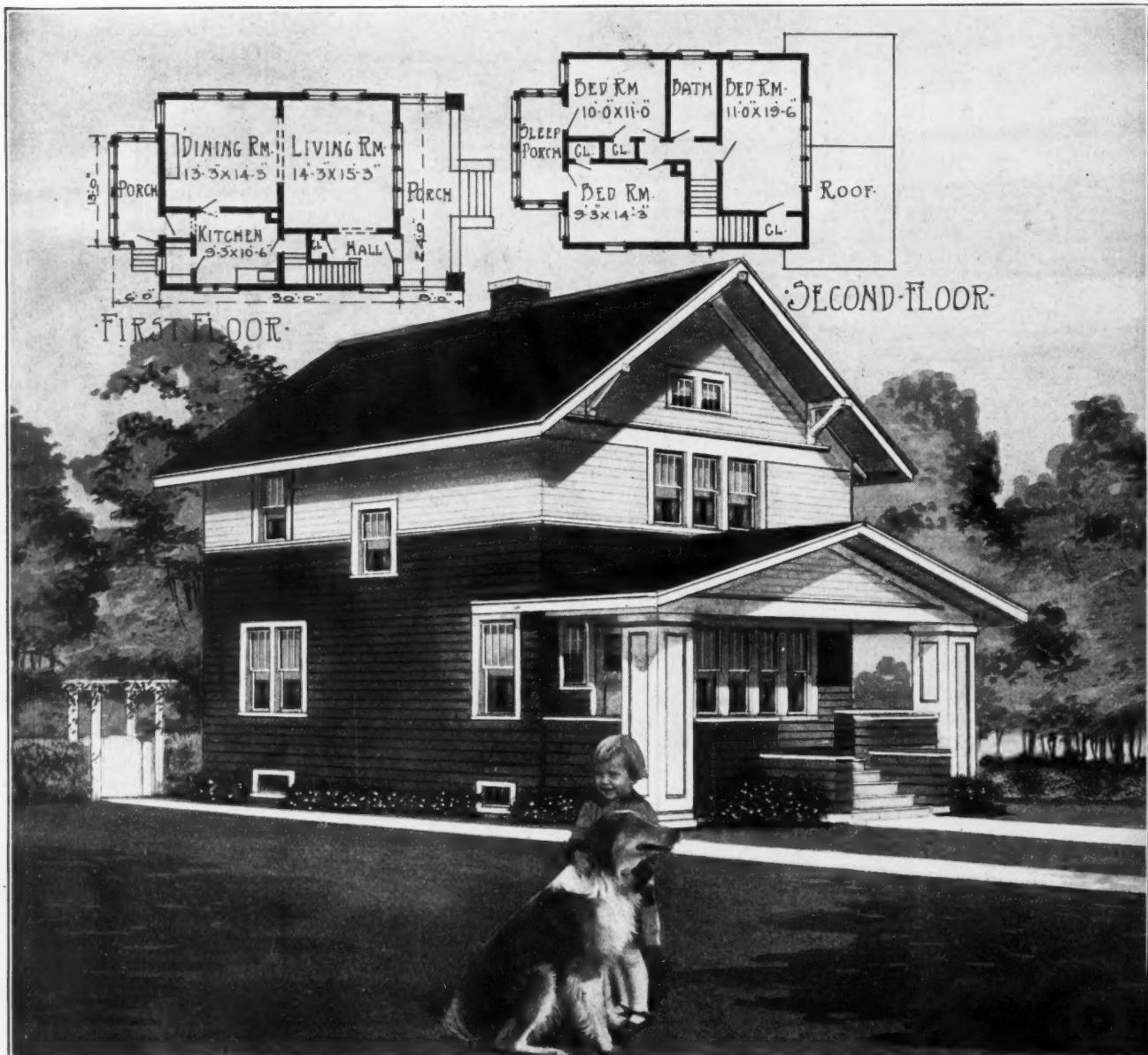
BLUE PRINT SUPPLEMENT IMMEDIATELY FOLLOWING, GIVES FULL WORKING PLANS OF WELL DESIGNED ECONOMICAL RESIDENCE OF SIX ROOMS, ILLUSTRATED BELOW

A COMPACT house of medium size, containing the important modern features is bound to sell or rent to advantage and give the owner or occupant genuine satisfaction. We are pleased therefore to present this design with complete working plans, feeling sure that it is what a good many of our readers will be able to use.

It would be hard to improve on this arrangement for a six room house, size 24x30 feet. The first floor has entrance hall, large living room, square dining room opening from it, small convenient kitchen,

pantry with outside window, and kitchen porch of goodly size screened in. Upstairs there are a large bedroom across the front and two smaller bedrooms at the back, these opening onto a sleeping porch. Bath room is centrally placed. There is a good supply of clothes closets, plenty of light and ventilation in every room, and a minimum of space used for halls.

The exterior design is handled in a snappy modern style. It is a good house, and the blueprints being drawn to exact scale, show just how it is to be built.



Modern Six-Room Residence, Complete Working Plans for Which Are Presented in the Four-Page Blue Print Supplement Immediately Following.

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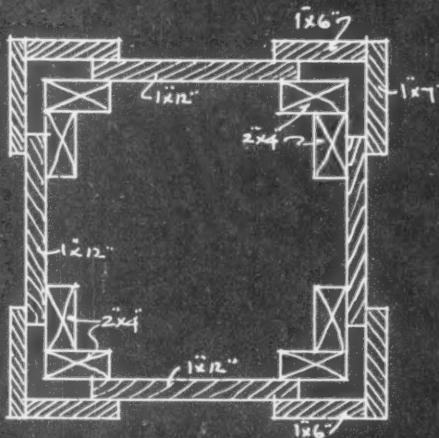
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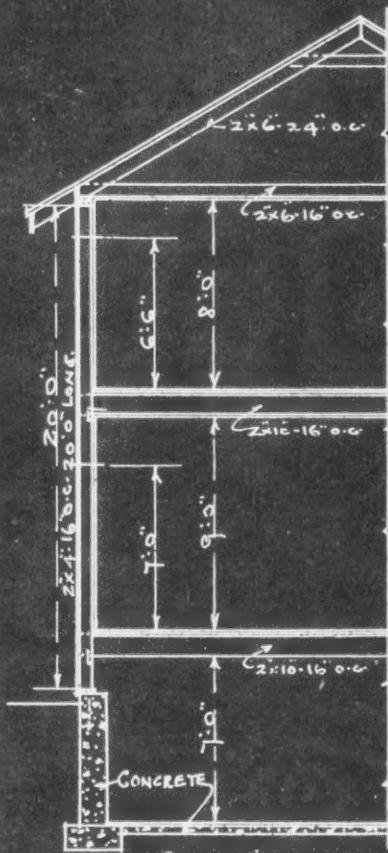
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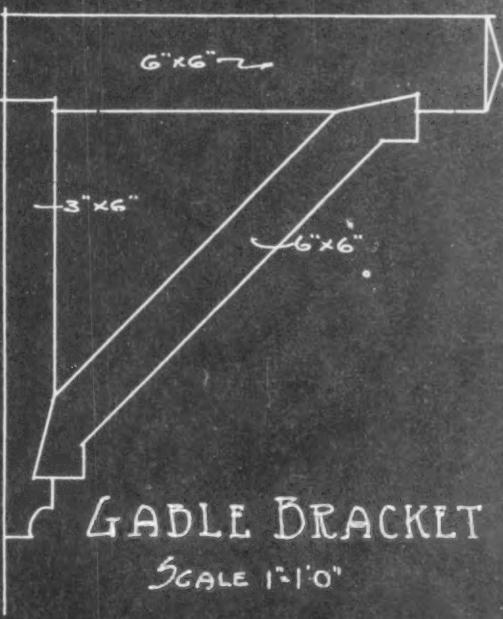
AMERICAN BUILDER BUILDING PLANS



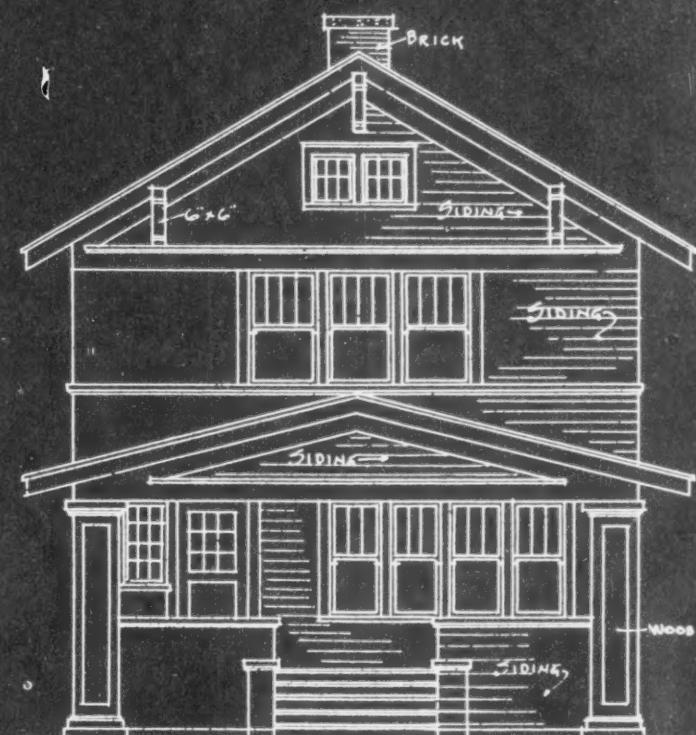
PORCH-COLUMN
SCALE 1:10



SECTION.



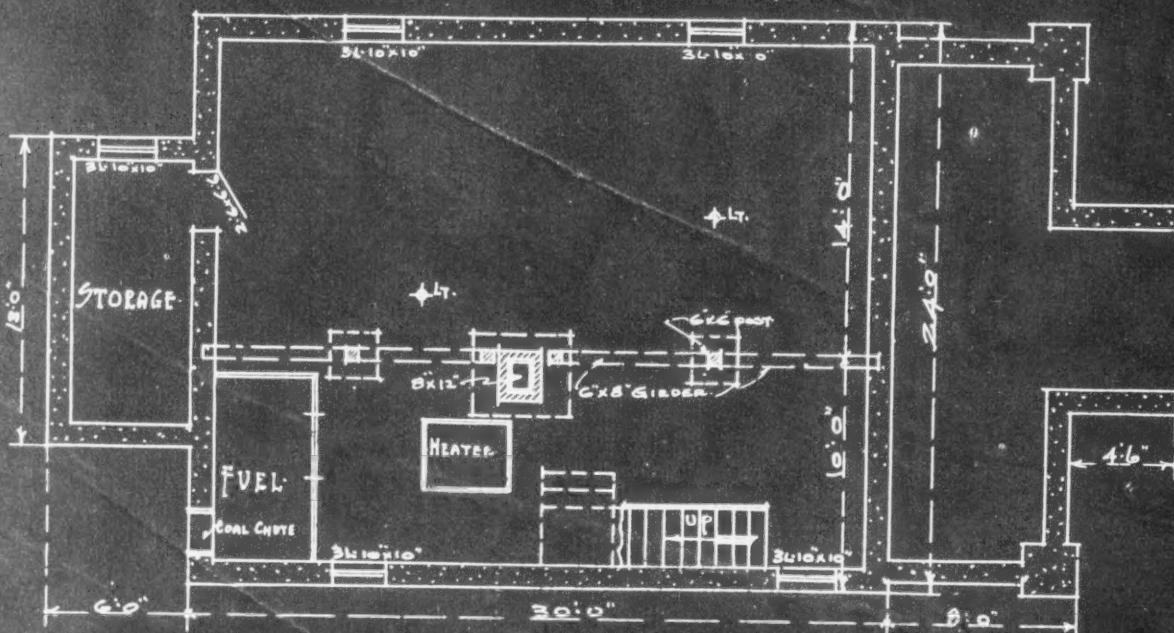
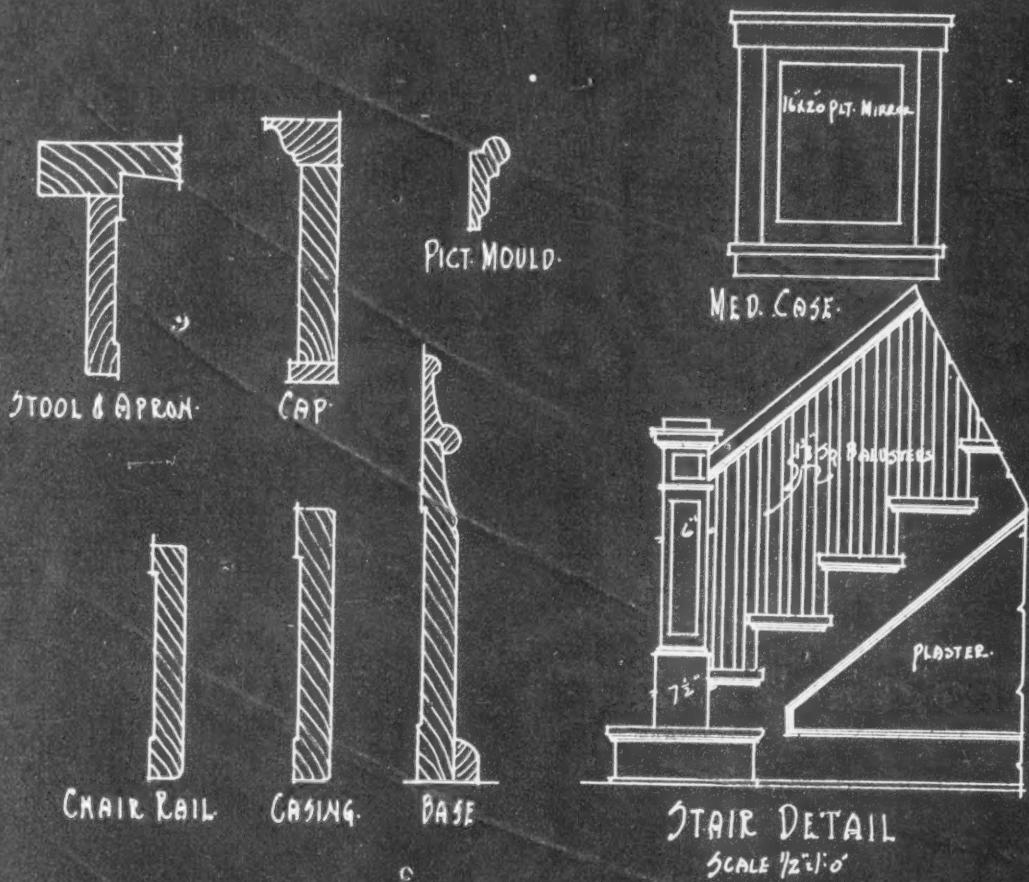
GADLE BRACKET
SCALE 1:10"



-FRONT ELEVATION-
SCALE 1:0".

SIX ROOM RESIDENCE SHEET NO. 1

AMERICAN BUILDER BUILDING PLANS

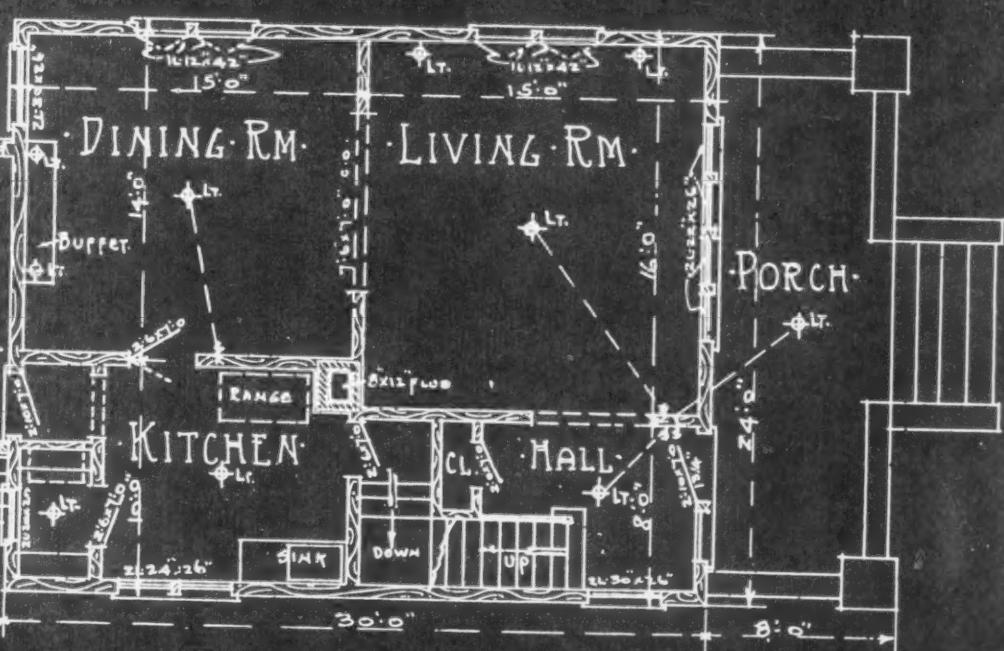
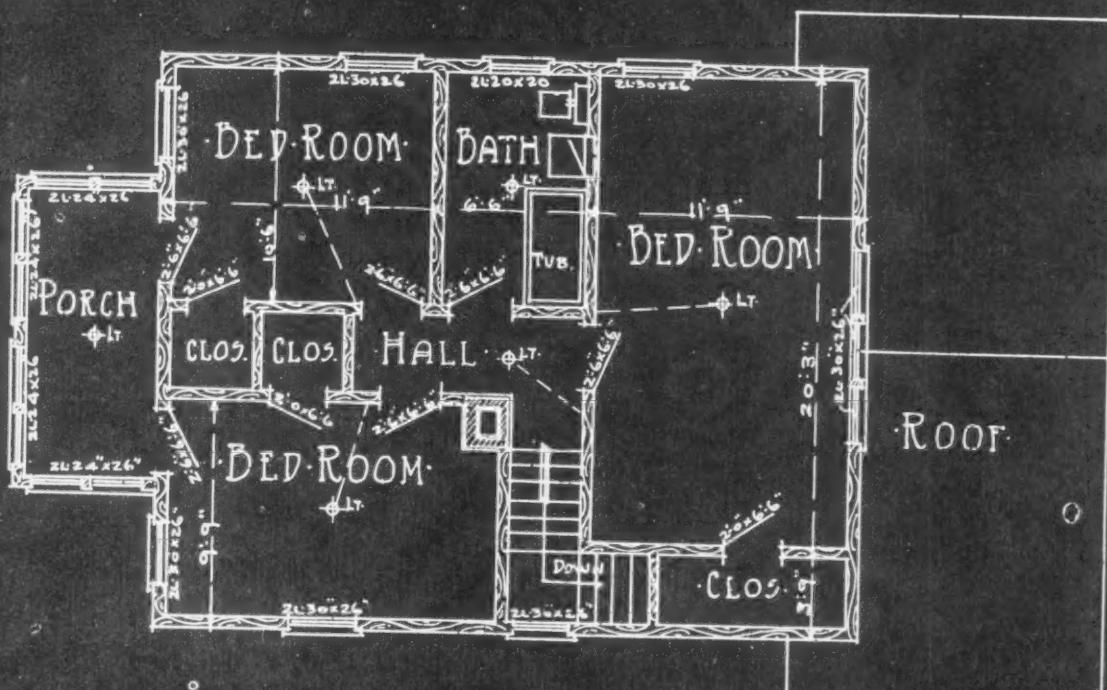


·BASEMENT·PLAN·
SCALE 1/8" = 1'-0"

SIX ROOM RESIDENCE

SHEET NO. 2

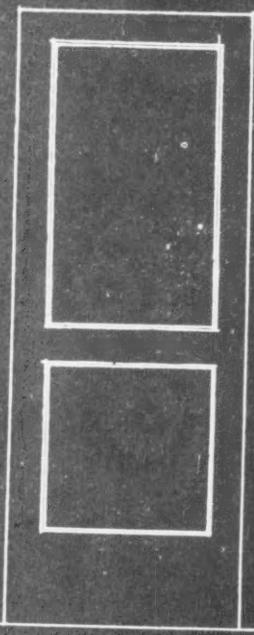
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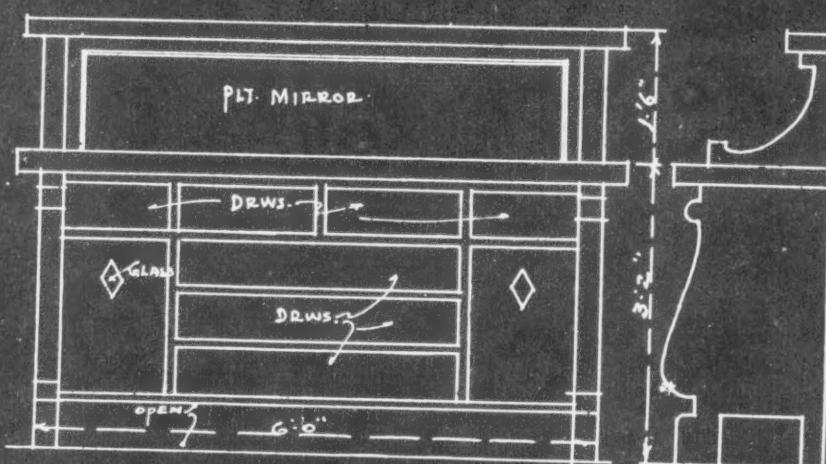
SCALE 1/8:1-0".

SIX ROOM RESIDENCE SHEET NO. 3

AMERICAN BUILDER BUILDING PLANS



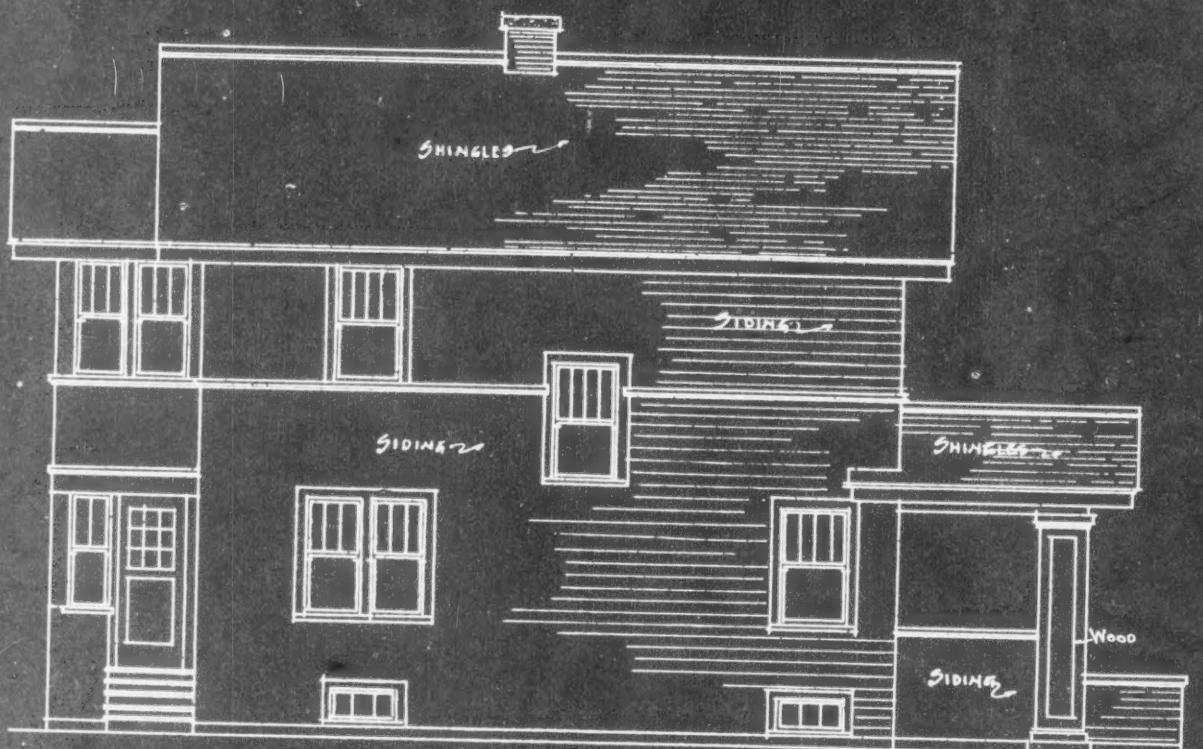
TYPICAL DOOR.



BUFFET

END.

SCALE 1/2"=1:0"



SIDE ELEVATION.

SCALE 1/8"=1:0"

SIX ROOM RESIDENCE

SHEET NO. 4



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Cutting Roof Blockings

By John Y. Dunlop

THE cutting of blocking pieces for the projecting eaves roofing is one of the details of roof construction which come before us very often.

Still, when I think back on the first roof of this kind which I assisted in the erecting I well remember the great amount of time and attention which was spent on the formation of the hip.

In that roof all the common rafter blocking were cut with the yard saw, but as the roof had four hips we were sent along with the roof timber a 1-inch plank sufficient to cut these members out off.

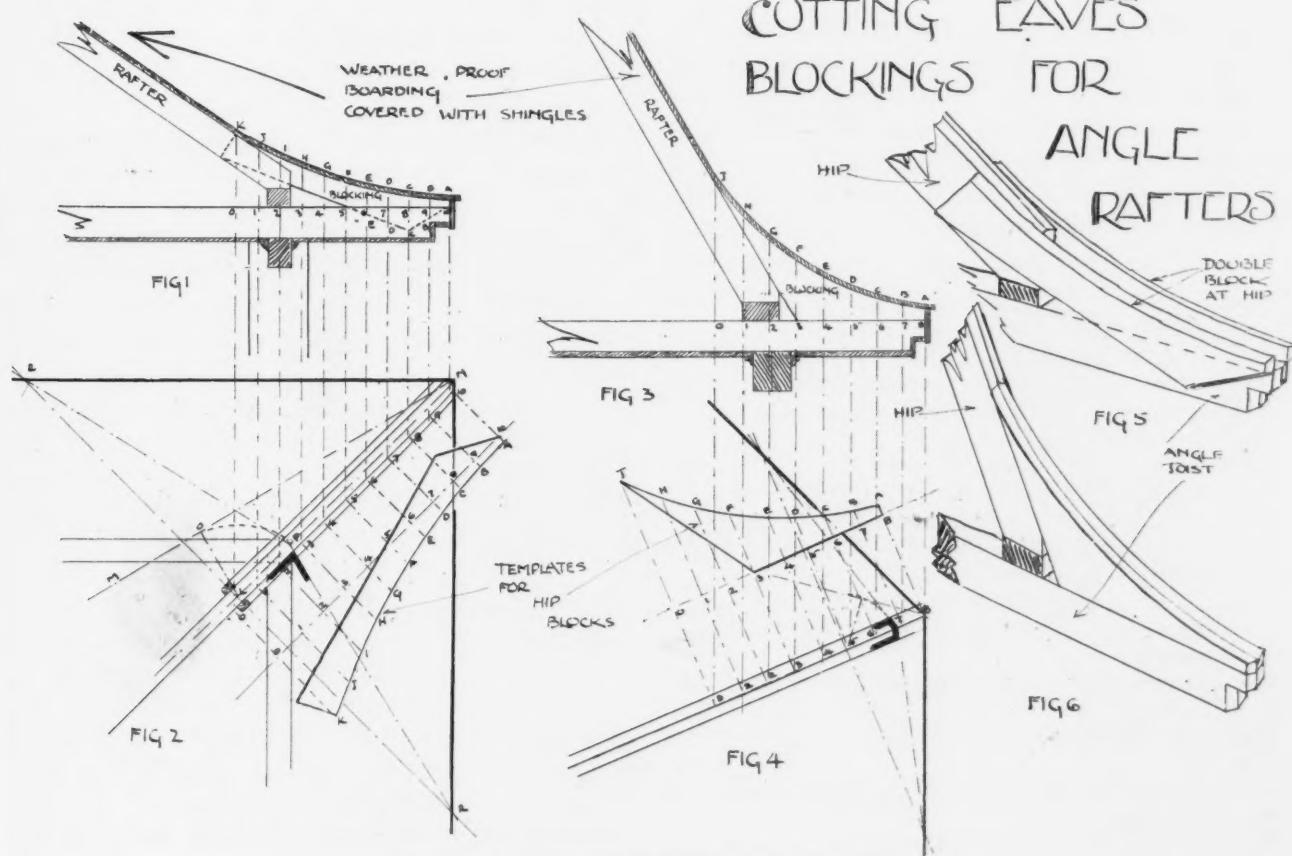
Of course, some doubt existed in the minds of the men on the job as to how these hip blockings should be cut.

Certainly they knew that the shaped edge must follow the line of the blocking on the rafters, but to what extent and what size were the block to cut out in their rough form for attaching on to the hip rafter?

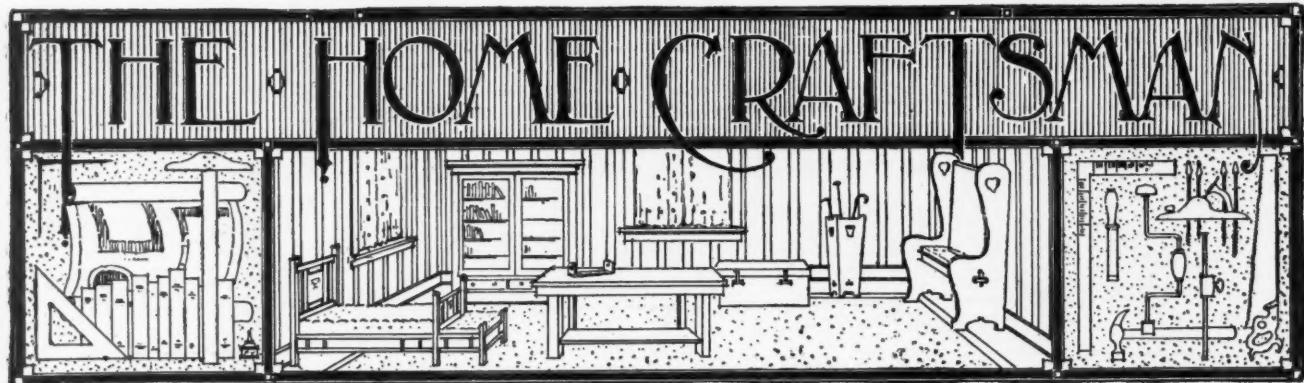
Their idea to get this particular piece of work done was to cut the pieces of wood big enough, nail them in position and then by the aid of a few straight edges project the line of the curve from the front blocks and the return front and cut out the angle blocking with a saw and chisel.

Quite a safe plan, but when one considers the amount of time lost in needless labor, not to speak of what had gone before the job was started, we would

(Continued to page 112)



How to Lay Out and Cut Various Rafter Ends.



How to Make a "Convertible" Table

By Frank O. Koch

THIS table is "convertible" in the sense that it can be changed to a writing desk by lifting the fall board and hinged position of table top, swinging same back to rest upon stationary half of table top as indicated in dotted lines on Section A. A. The desk top is fitted into runners to slide out thereby providing plenty of writing space. This article, combining the two features, makes it both economical and space saving. When closed it makes an excellent side or center table for flowers, photos, etc.

This piece, being of "Arts and Crafts" design, the most suitable wood to use would be (kiln dried) quarter-sawed white oak, but if this is not readily obtainable any of the numerous furniture woods may be used.

You will save yourself lots of laborious effort by ordering the material from the planing mill, dressed 4 sides and sanded where specified. If you wish to cut out the pieces by hand you must allow for planing and squaring to sizes required in following material bill. All material is to be of quarter-sawed white oak, unless otherwise specified.

Material Bill

Four legs $1\frac{3}{4} \times 1\frac{3}{4} \times 31\frac{1}{8}$ inches, sanded 4 sides.
 Two end rails $\frac{3}{8} \times 7 \times 17$ inches, sanded 2 sides.
 Two end rails $\frac{3}{8} \times 3 \times 17$ inches, sanded 2 sides.
 One back rail $\frac{7}{8} \times 7 \times 29$ inches, sanded 1 side.
 One fall board $\frac{7}{8} \times 6\frac{1}{4} \times 26\frac{1}{2}$ inches, sanded 1 side.
 One stay strip $\frac{7}{8} \times 3 \times 27\frac{1}{2}$ inches.
 Four slats $\frac{3}{8} \times 2 \times 15\frac{1}{8}$ inches, sanded 2 sides.
 Two slats $\frac{3}{8} \times 4 \times 15\frac{1}{8}$ inches, sanded 2 sides.
 Table top, 2 pieces, $\frac{7}{8} \times 10 \times 32$ inches, sanded 1 side.
 Desk top (glued up) $\frac{7}{8} \times 15\frac{3}{8} \times 26\frac{1}{2}$ inches, sanded 1 side.
 Two runners, $1 \times 2\frac{1}{2} \times 15$ inches.
 Drawer, 1 front piece, $\frac{1}{2} \times 2 \times 6\frac{1}{4}$ inches.
 Two side pieces $\frac{3}{16} \times 2 \times 7\frac{1}{4}$ inches (poplar) or other suitable soft wood.
 One end piece $\frac{3}{16} \times 1\frac{3}{4} \times 6\frac{1}{4}$ inches (poplar) or other suitable soft wood.
 One bottom $\frac{3}{16} \times 6\frac{1}{4} \times 6\frac{1}{2}$ inches (poplar) or other suitable soft wood.
 Pigeon holes, 1 top piece $\frac{3}{16} \times 6\frac{7}{8} \times 25\frac{1}{2}$ inches (poplar) or other suitable soft wood.
 One back piece $\frac{3}{16} \times 5\frac{1}{4} \times 25\frac{1}{2}$ inches (poplar) or other suitable soft wood.

Three cross pieces $\frac{3}{16} \times 6\frac{7}{8} \times 6\frac{1}{2}$ inches (poplar) or other suitable soft wood.

Eight upright pieces $\frac{3}{16} \times 6\frac{7}{8} \times 5\frac{1}{4}$ inches (poplar) or other suitable soft wood.

Gluing up parts is done best in a warm place, having the wood warm and using good hot glue.

To begin, cut $\frac{3}{8}$ -inch tenons of length required on end rails, back rail and stay strip, leaving a shoulder on all four sides of the tenons. See Section A-A, Detail E and Detail D. Cut $\frac{1}{4}$ -inch mortises, $\frac{1}{2}$ inches deep, in edges of endrails to receive ends of slats, which are to be tenoned accordingly as shown.

Taper the legs as shown, slightly rounding the bottom edges to prevent slivering. Cut $\frac{3}{8}$ -inch mortises in legs to receive tenons on rails and stay strip.

After cutting the triangular openings in the wide slats, the ends of the table may be glued up.

When the ends have "set up" sufficiently the runners may be grooved and rabbeted as indicated on Detail F. Cut out the runners to fit over back legs as shown on Detail D and secure them to end rails with glue and finishing nails.

Cut out the ends of stay strip to fit around runners. See Detail E. Stay strip and back rail may now be glued into the ends using corner straps for additional strength. See Detail E.

The stationary portion of table top may now be secured from the inside to end and back rails with small angle irons or screws. If angle irons are used, they must be "let into" the top and rails so as to be flush with surface of the wood, so as not to interfere with placing of pigeon holes.

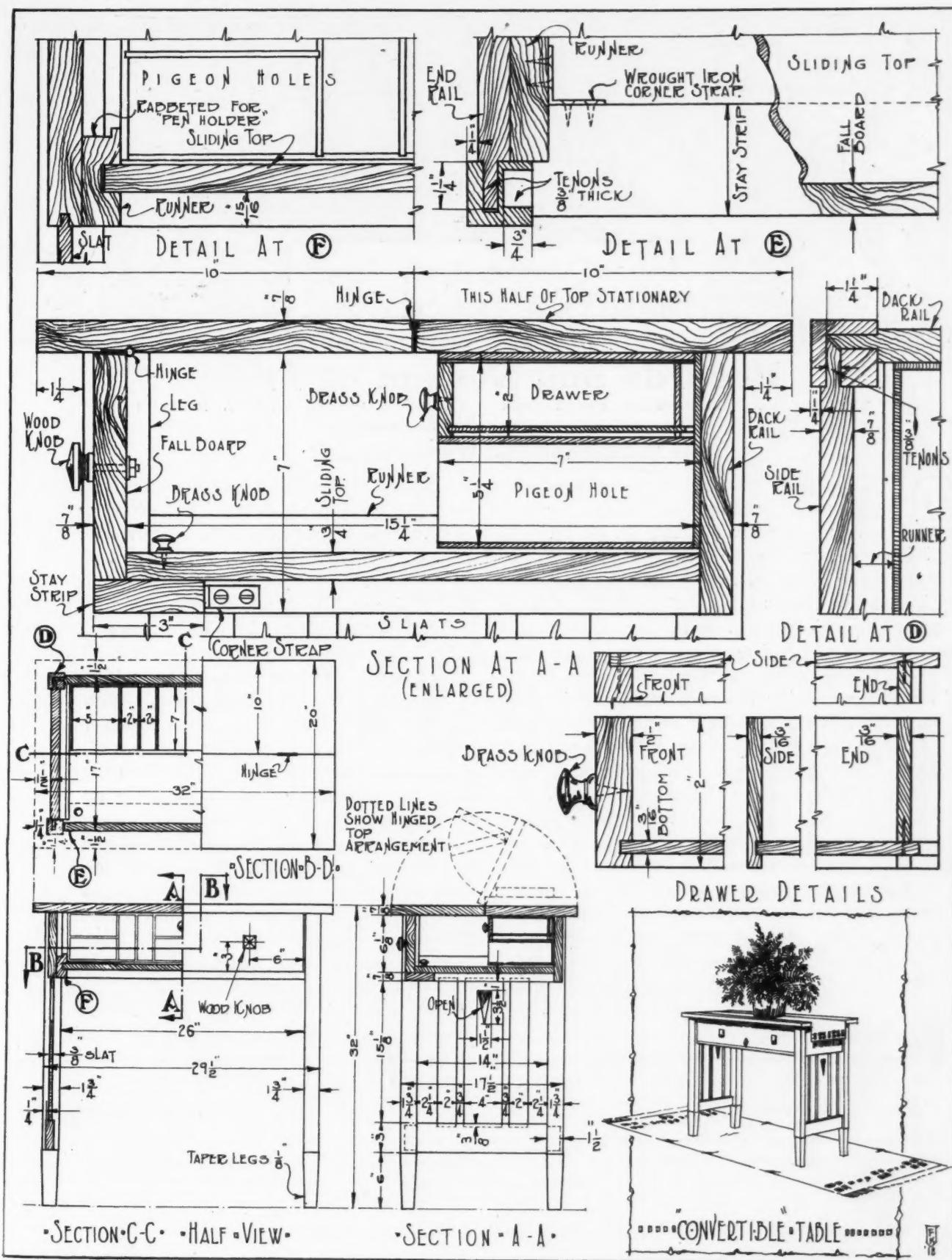
Hinge the front half of table top in position and hinge fall board thereto after same has been cut for length and fitted. See enlarged Section at A-A.

I recommend the use of Soss invisible hinges for the top, as they do not show when the top is closed, being invisible, as the name implies. If these cannot be easily obtained, use brass butt hinges.

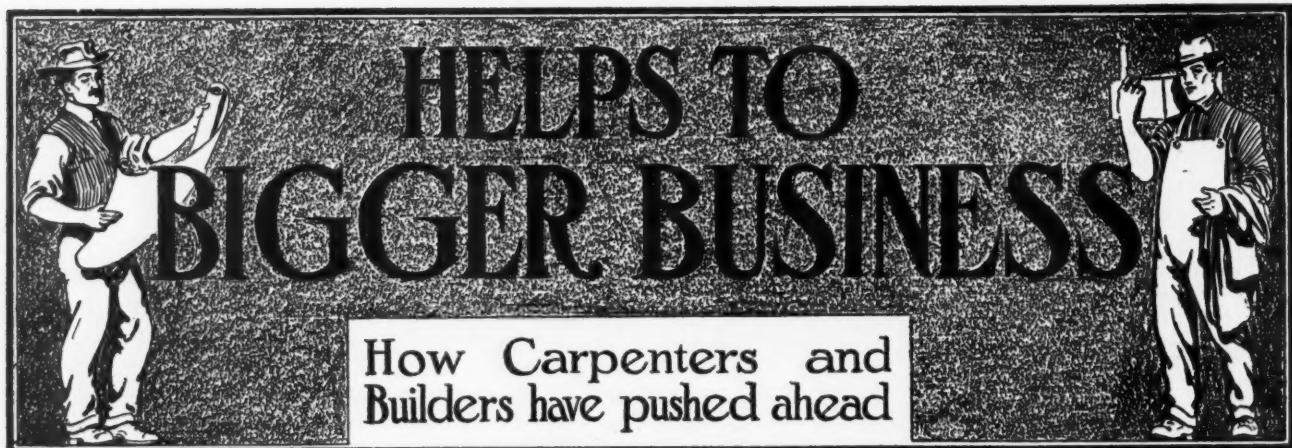
Supply fall board with two wood knobs of style

(Continued to page 122)

Details of "Convertible" Table



Perspective Sketch and Working Drawings Showing Construction of an Ingenious Table Desk, as Designed by Frank O. Koch.



Records and System of Filing

THAT ENABLE AN EASTERN CONTRACTOR TO HANDLE DETAIL WITH A MINIMUM OF RED TAPE AND EXPENSE

Transcribed by **Walter Engard**

EVERY day I am more and more impressed with my system of handling the details of my business. When my contracting business was in its infancy details gave me little bother; but as the business grew and expanded details became more burdensome, and how to handle these details with the minimum of red tape and at the very lowest costs was the problem I had to solve. My present system of handling these details is the result of several years of thought and study and enables me to handle them in a systematic way. I will tell of some of the methods I use, in the hope they will prove of value to other contractors who may have the same problems.

My filing and record system consists of one combination filing cabinet. This cabinet, composed of four deep, cap-width filing drawers, each 10 inches high, 14 $\frac{3}{4}$ inches wide and 22 inches deep; two deep letter filing drawers, each 10 inches high, 12 $\frac{1}{8}$ inches wide and 22 inches deep; three blue print filing drawers, each drawer 2 $\frac{3}{4}$ inches high, 30 $\frac{7}{8}$ inches wide and 22 $\frac{1}{4}$ inches deep; (each of these drawers is hooded at the back to keep papers from curling); three 6 by 9 inch card index drawers, and four 4 by 6 inch card index drawers.

I use one of the four deep, cap-width filing sections for filing invoices and bills. This section is divided into three compartments, each compartment having "A to Z" guides. In the front compartment I file all my unpaid invoices. I have a "guide high name folder" for each firm, and all of this firm's invoices are filed in this folder. This folder has a tab which extends just a little above the body of the folder, and upon this tab is written the name and address of the firm whose invoices are filed within. These folders are then filed in this front compartment in alphabetical order. In the second compartment of this section I file all my paid invoices for the current year, using the same method as I do in filing my unpaid invoices, and then in the third, or back, compartment of this section I have filed all my paid invoices for the previous year. I find it necessary to refer to some of the previous year's invoices a great many times during the year, and thru this method I have them handy and can be quickly found when I want them. I use the same method of filing these as is used in the other two compartments.

Then I use another of the four deep, cap-width drawers in which to file all my quotations, price lists,

LEDGER CARD

Name—Ralph G. Hardin

Contract No. 234

Address—123 West Madison Street

Contract Price, \$7,500

Da	Debits	Amount	Date	Credits	Amount
Aug. 2d	To Contract	7550 00	August 15th	By Check	75 00
Sept. 5th	Difference between Doors used and those called for by Contract	75 00	Aug. 30th	By Check	260 00
Sept. 10th	Change in Windows	15 00	Sept. 10th	By Check	2500 00
		7640 00	Sept. 15th	By Check	4805 00
					7640 00

6 by 9-Inch Ledger Card to Be Filed Alphabetically.

116 by 9-Inch Cost Card Made Out in Name of Customer and Filed Alphabetically.

etc., and these are filed alphabetically, and a folder is provided for each firm as used in the above section. When I wish to refer to the price list of a certain firm I turn to this drawer and find the folder with this firm's name upon it.

The two remaining deep, cap-width drawers are used for filing catalogs. Here I used a little different system of filing. Each catalog is numbered and filed according to number. This drawer is fitted with numbered guides, numbered in 5s, as 5, 10, 15, 20, 25, 30, etc., and catalogs are filed between the numbers where they fall, as catalog number 18 will be filed between the guide cards 15 and 20; catalog number 23 will be filed between the guides 20 and 25, etc. I use a card index system as my guide to the different catalogs, and for this purpose I use one of the four 4 by 6 inch card index drawers. This drawer is provided with alphabetical guides and the cards are filed alphabetically. I "cross index" my catalogs; that is, I index both the firms' names who issue the catalogs and the name of the articles I buy. Both cards, however, are filed in the same drawer. To illustrate, when I receive a catalog I fill out a card with the name of the firm issuing the catalog and their address, and then on the right-hand side of this card

I enter the number that I have given their catalog. Then I take cards and enter on them the names of articles this catalog lists, filing a separate card for each item, and just below the name of the article I enter the name of the firm and the number of the catalog. The name and number of every catalog in my file listing these particular items are also entered on this card—that is, if I should have ten catalogs listing door butts I do not fill out ten separate cards with the name "door butts" on it—instead the one card contains the name of the ten different firms and their catalog numbers. When I wish to look up "door butts" I turn to my catalog index file, and finding the card with "door butts" on it, I find there is a list of all catalogs in my collection which list "door butts." and their number, and then turning to the catalog file, I can turn immediately to them without any trouble or loss of time. If, however, I wish to look at a certain firm's catalog I get the firm's card out of the index drawer, and this card gives me the number of the catalog, and I can turn to it without any trouble.

While this method of filing catalogs requires a little work at first, it is well worth the effort and the price in the saving of time and patience in looking for cata-

OVERHEAD

6 by 9-Inch Overhead Cost Card Filed by Months.

Cost Keeping System for Builders

[January, 1919]

Name.....	Rate per Hr.....						
On Contract No.....	O. K'd by						
Foreman							
Date	Began	Quit	Began	Quit	Hours	Rate	Total

4 by 6-Inch Time Card Shows Record of One Man for One Week.

logs. Each catalog is indexed and numbered just as soon as it is received, and old ones are replaced by new ones as soon as the firm issues a new one; this way I keep my files right up to the minute at all times.

All my correspondence is filed in one of the two deep letter filing drawers. This drawer is provided with "A to Z" guides, and all letters are filed alphabetically. I keep a carbon copy of all replies to letters, and these are filed right with the letter. Folders are provided for each firm or person with whom I have any great quantity of correspondence.

In the other deep letter filing drawer I file all contracts, estimates and bids. Contracts, estimates and bids are also filed by number. This drawer is fitted with numbered guides the same as the catalog file, and one of the 4 by 6 inch index drawers are used for the guides to my contracts, etc. Every contract, estimate or bid is numbered and a card filled out upon which is entered the name of the person with whom the contract is, or to whom the bid is for, and also the number of the contract or estimate. When I wish to refer to such and such a contract I find the number of same by referring to my index card. For instance, I have a contract with Ralph G. Harding, and I wish to refer to that contract; I turn to my index drawer, and behind the guide "H" I find Mr. Harding's card, and this card tells me that his contract is No. 234. I then turn to my contract file, and behind the guide "230" I will find this contract. This saves me considerable time in looking up contracts, estimates and bids.

The three 6 by 9 inch card index drawers I use for filing my "Ledger Cards," "Cost Cards" and "Overhead Cards." These drawers are provided with alpha-

betical guides and cards are filed alphabetically, excepting the "Overhead Cards." The file in which these cards are filed is provided with Monthly guides, and cards are filed by the month.

Just a word or two in regard to these cards and what they are used for. The "Cost Card" is used to keep an accurate account of costs on every job. This card is illustrated by a cut accompanying this article. One of these cards is opened for every job, and upon it is entered the name of the person for whom the work is being done, his address, the contract price and number. Under the heading "Material" is charged every bit of material of any nature that goes into this job, and under the heading "Labor" all labor is charged. When the job is completed these columns are totaled, and I know just what I have made on this contract.

The "Ledger Card" is my method of keeping accounts. Upon this card is entered the name and address of the party with whom I have the account, also the contract number and price if work is being done on contract. Under the heading "Debits" is entered all charges, and under heading "Credits" is entered all credits. I like this method of keeping accounts far better than any book form or loose leaf method. As soon as an account has been settled in full the card is transferred to "Closed Accounts," which are kept in the rear of the "Overhead Card" drawer.

My "Overhead Cards" are for keeping an account of all overhead expense; this expense includes all articles or items which cannot be charged directly to the cost of filling the contract, such items as my own wage, auto repair, gasoline, tools and various other articles. A separate card is used for each month.

One of the remaining two 4 by 6 inch index drawers is used for filing my "Time Cards," like cut accompanying this article. Every man fills out his time card each day, and one card lasts a week. These are then O. K'd by the foreman of the job and returned to me so I can pay each man what is coming to him, and also that I might charge the correct time to each contract or job. If a man is working on contract No. 45, and for some reason is transferred to contract No. 74, he will have to start a new time card, for a separate time card is kept for each job.

(Continued to page 116)

RALPH G. HARDING, City Contract No. 234	BOSTWICK-BRAUN CO., Toledo, Ohio Catalog No. 54	DOOR BUTTS Cat. No. Smith Bros. Hardware Co. 71 Bostwick-Braun Co. 54 P. & F. Corbin 101
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4 by 6-Inch Index Cards for Keeping Track of Catalogs, Contracts, etc. These Are Filed Alphabetically.

Fixing up the Farm

General Utility Room for Farm Homes

PROPOSAL FOR AN ADDITION TO HOUSE MODERN FARM HOME CONVENiences—FARM WATER SUPPLY—LAYOUT FOR PIPES AND FIXTURES

By George M. Warren

Hydraulic Engineer, in U. S. Dept. of Agriculture Bulletin



A GOOD WATER SUPPLY, a complete sewage-disposal plant, and effective heating and lighting systems constitute the four prime utilities of the farm home, the foundations of safe, comfortable living. To secure these ends in greatest measure, thought and planning are necessary. If the procedure is haphazard, if the parts are not correlated, there is neither economy in the construction nor satisfaction in the operation of the plant.

To illustrate: When locating the well, the direction of surface and underground drainage should be considered, to the end that the water supply may not be contaminated by the sink drain, cesspool, or other sources of filth. The unused water from a spring or flowing well may be made valuable if brought to a

watering trough, cooling tank, fish pond, or swimming pool, or harvested as ice. A saving may be effected by laying two lines of pipe in one trench. The engine which drives the pump may operate other useful appliances, such as a dynamo, saw, washing machine, cream separator, or churn.

Figure 1 suggests a utility room built as an addition to a farmhouse having few improvements and no cellar. Attention is directed to the convenience of a laundry and a lavatory and a warm, dry room just off the main part of the house where farm hands can wash, and in stormy weather deposit their wet coats, boots, and shoes.

A notable example of home-planned utilities is found upon a farm in northern Utah. By personal planning and hard work, the owner of this farm gradually has equipped his house with a pressure water system, a laundry containing a power washing machine, wringer, mangle and drying machine, a heating plant, electric lights, electric range, electric heaters for emergency use in chambers, and a vacuum cleaning system.

Inside Pipes and Fixtures

Figure 2 shows an arrangement of pipes and fixtures in a well-equipped farm home. The cold-water pipes are shown in outline and the hot-water pipes in black. The size of the pipes may be varied according to the pressure from the supply tank and the demands for water at particular points. Under average conditions, say where the pressure is from 20 to 40 pounds, the sizes shown in the figure are ample. All pipe and fixtures should be durable and so installed that inspection, control, drainage, and repairs can be made easily. The fixtures should be of simple, approved patterns. The main supply pipe should have a stop and waste cock just inside the cellar wall. In cold climates and in houses not well heated, pipes should be kept from outside walls.

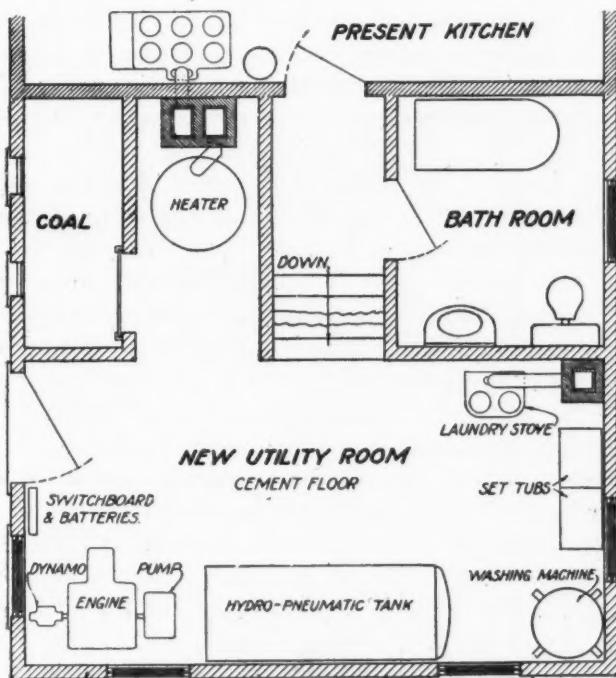


Fig. 1. Suggested Utility Room for Farmhouse Having Improvements and No Cellar.

(Continued to page 108)

City Comforts for Farm Homes

PEOPLE who like country life the most, usually appreciate certain household conveniences which city people can enjoy for the reason that city people have sewers.

It saves work to have kitchen, bath, laundry and dairy piped for water and equipped with drains. One who has enjoyed these conveniences for a few days would not be without them for a fortune.

Old-fashioned, outside closets have been a bugbear to their users and have largely offset the healthful features of rural life. They often contaminate wells. They are uncomfortable in cold weather, cause colds, catarrh and pneumonia. When visits are postponed, thru dread of cold, serious internal disorders develop.

Farm houses can have sewers, modern plumbing and city comforts at moderate cost. But where the city man's sewer is built past his door, without requiring any thought on his part, the country dweller must plan his own system with view to existing conditions.

The wide distribution of vitrified clay pipe and the ease with which it is installed makes the task economical and well within the ingenuity of the average builder to accomplish.

Features to Be Considered.—The problems to be met in installing modern plumbing appliances in country homes are:

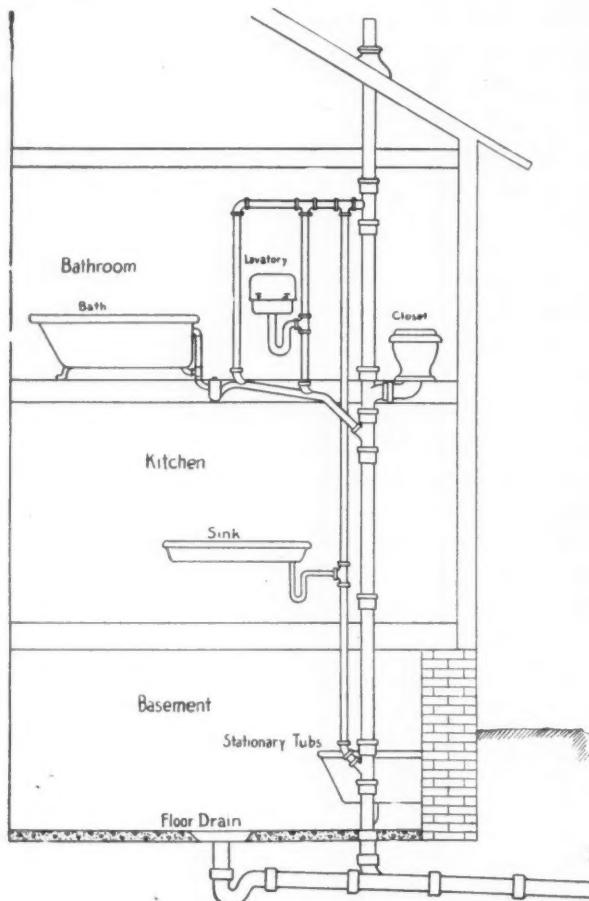


Fig. 1. Design Shows How a Home Is Modernized When the Sewage Question Has Been Solved.

1. Sufficient water.
2. A method of maintaining water pressure.
3. Plumbing appliances and piping.
4. A house drain and sewer of vitrified clay pipe, leading from the base of the stack to the disposal system.

Amount of Water Needed.—City water works plants make provision for not less than 50 gallons of water per day per inhabitant for all household purposes. Care exercised to save water in farm homes often makes it possible to reduce this figure considerably in such plants as are described here.

Prof. F. W. Ives of the Department of Agricul-

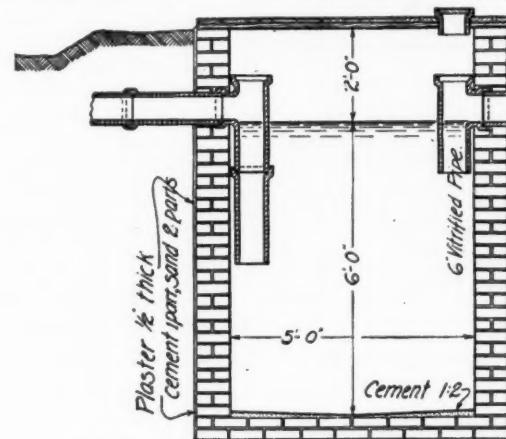


Fig. 2. A Single Chamber Septic Tank.

tural Engineering, Ohio State University, who has had much experience in installing experimental sanitary equipment on farms, fixes 25 to 40 gallons per inhabitant as the usual range of use for farm homes.

Wells are the most usual source of water on farms. If rain water is used, either as a main source of supply or as an auxiliary, you may calculate on the basis of 30 inches of rainfall per year, in eastern states, after the loss from evaporation or blowing away of snow has been deducted. This means nearly 20 gallons per square foot of roof space.

Maintaining Pressure.—To operate a plumbing system, water must be under constant pressure. There are several ways to do this.

A tank in the attic is simple, but open to some objections. If much water is stored, the construction of the house must be strong to support it. There is danger of leakage, too.

Tanks of moderate size are sometimes used in connection with an outside cistern or well, the water being pumped to the tank for the purpose of maintaining gravity pressure, either by hand or power pumps.

Air pressure systems have the greatest approval at present. They call for a tank in the basement into which water is pumped periodically from a well or

20 to 100 feet of 6 in. Vitrified Sewer Pipe with Cemented Joints Connected with Septic Tank.

City Comforts for Farm Homes

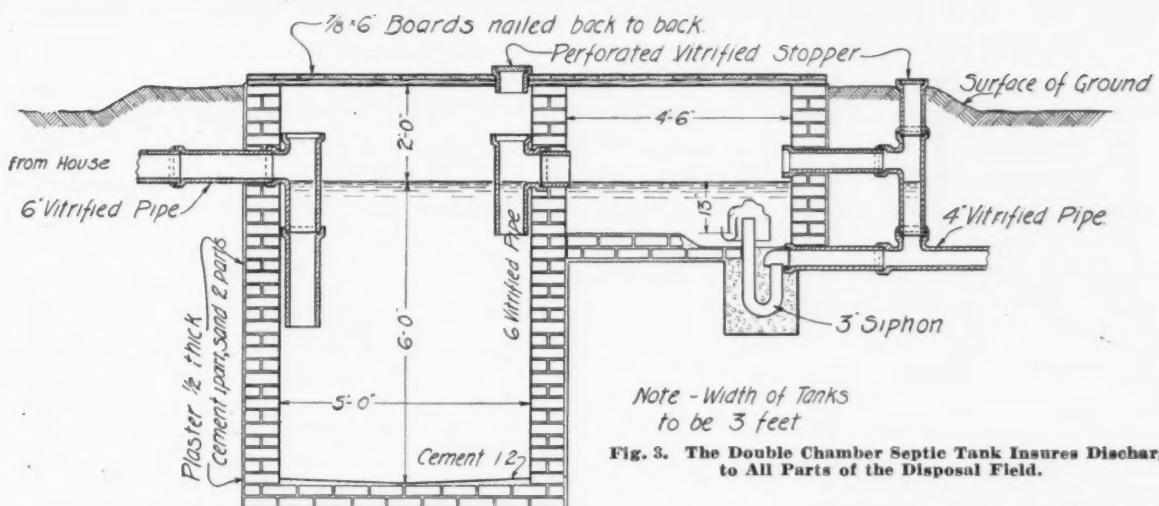


Fig. 3. The Double Chamber Septic Tank Insures Discharge to All Parts of the Disposal Field.

cistern. As the tank is filled by pumping, the air in the tank is crowded and compressed sufficiently to force water to the height needed for sanitary purposes.

More than a dozen pressure systems are manufactured and offered for sale, with either hand pumps, gasoline power pumps or electric pumps.

Costs of this equipment vary with the time and locality. Get quotations from some reputable concern in the nearest town.

Plumbing and Plumbing Fixtures.—So many things can go wrong with a plumbing system and so much annoyance can be caused by each mishap that the individual householder is not advised to install his own plumbing fixtures, but to employ a competent and reputable plumber, who understands the location of traps and vents and the joining of metal pipes so as to avoid all risk of leaks.

The choice of baths, sinks, lavatories and other plumbing fixtures is largely a matter of individual choice. Again the question of price depends upon your locality, the current market and your tastes.

There are few ways in which money can be made to produce more lasting satisfaction than in good sanitary fixtures.

Methods of Sewage Disposal.—The proper disposal of the sewage of a single family does not create a large problem in sanitation, but due care must be exercised against offensive odors and contagion, and the system must suit the existing conditions. There are several general methods of sewage disposal as follows:

- A. Discharge into a water course.
- B. A leaching cesspool.
- C. A septic discharging into either—
 - 1. A water course.
 - 2. A leaching cesspool.
 - 3. A subsoil disposal field.
 - 4. A surface filter bed.

The method of discharging into a water course is considered safe only when there is water enough to cover the outlet at all times and when the stream below is not used for water or ice supply.

Leaching cesspools are holes in the ground, usually

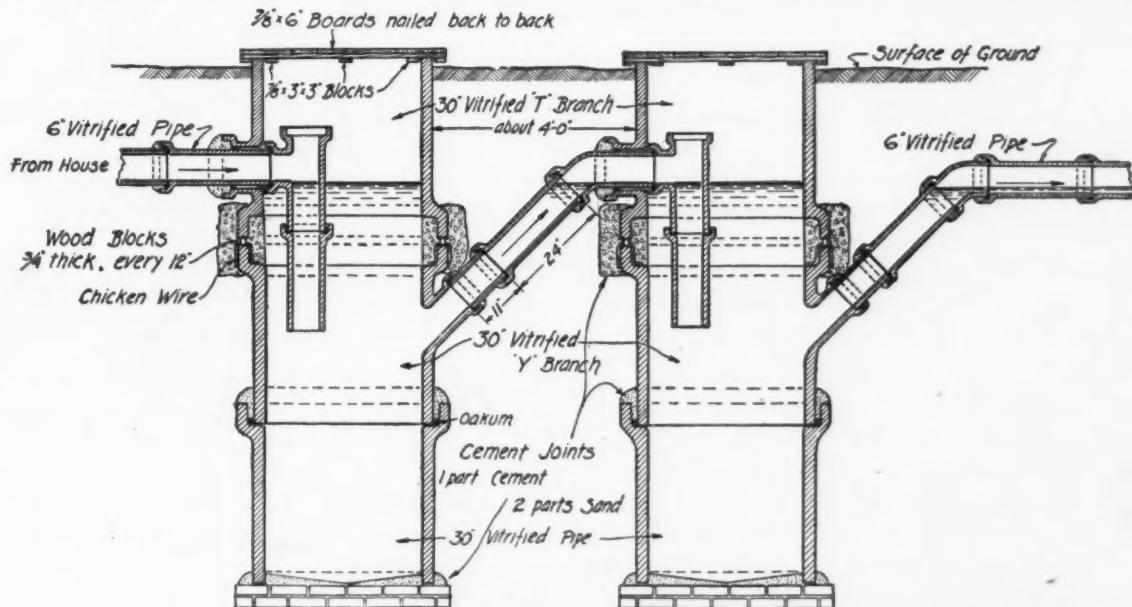


Fig. 4. A Septic Tank of Vitrified Pipe Is Simple to Construct and Gives Everlasting Service.

City Comforts for Farm Homes

built from 8 to 12 feet deep and 6 to 8 feet in diameter, walled with loosely laid brick or stone. They permit the liquid sewage to seep into the ground, while the solid matter is deposited in the bottom and must be cleaned out periodically, at least once in two years. They are permissible only when the ground is dry sand or gravel to the full depth and when they can be located at least 300 feet from a well.

Sanitary authorities all recommend, however, that sewage be passed thru a septic tank, where the liquid and solid matter are separated and a certain amount of purification takes place.

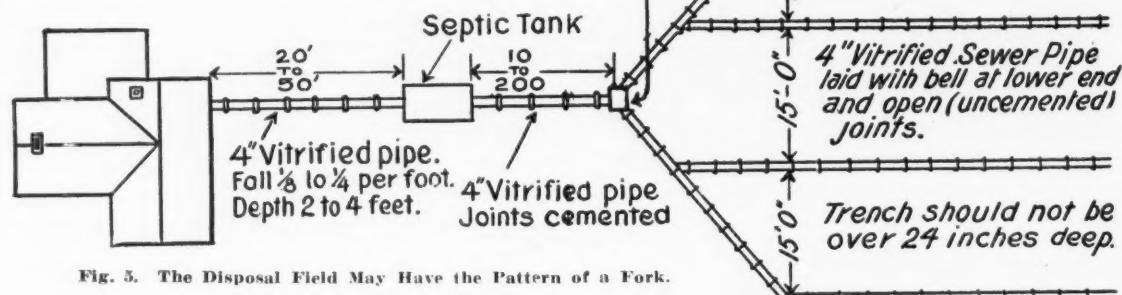


Fig. 5. The Disposal Field May Have the Pattern of a Fork.

The liquid overflow should then be conducted into a vitrified pipe disposal system unless, as stated above, the conditions justify discharge into a water course or leaching cesspool.

The Septic Tank.—The septic tank is a water-tight box of brick or other masonry construction, constructed largely in excavation. When filled with sewage, bacteria, which are formed in the tank, act to break up the solid matter, causing the heavier ingre-

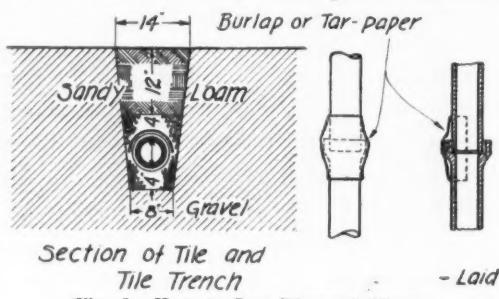


Fig. 6. How to Lay Disposal Pipes.

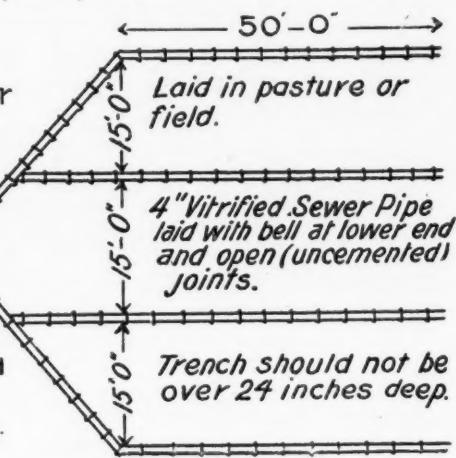
dients to drop to the bottom, forming what is known as sludge, and the lighter material, or scum, either to float on the surface or to be carried away in a finely divided state in the liquid leaving the tank.

There is little odor produced by this process, tho a nuisance will be quickly created by the effluent if this is not properly taken care of. The tank can be placed 20 to 100 feet from the house without giving offense, even from a vent in the top, as shown in the cut. The vent can be covered with a perforated wood or vitrified clay disc or stopper.

The bacteria, which are so active in the tank, work best in the absence of air and this condition is produced by the scum which forms on the surface. In order not to disturb this scum, vertical T joints or wood scum boards are inserted, as shown, so that the flow will be directed toward the bottom. The vent

pipe is placed over the outlet T in order to facilitate breaking up any heavy scum which might clog the flow at this point.

The sludge accumulating in the bottom of the tank amounts for a single family to two or three buckets per month, and the scum about twice this quantity. The contents of the tank should be removed once or twice a year by means of a bucket or a hand pump



of the diaphragm or trench type, discharging into a barrel. The material removed should be buried, but not in the vegetable garden.

Too much grease interferes with the proper action of the tank. If your sewage contains more than a small portion of grease, install a grease trap of vitrified clay in your house drain.

Construction of Single Chamber Tank.—Five feet in length, three feet in width and six feet in depth below the flow line are suitable dimensions for a tank of the single chamber design for a family of six. One foot in length should be added for each additional person, up to ten.

If made of brick, follow the general practice of

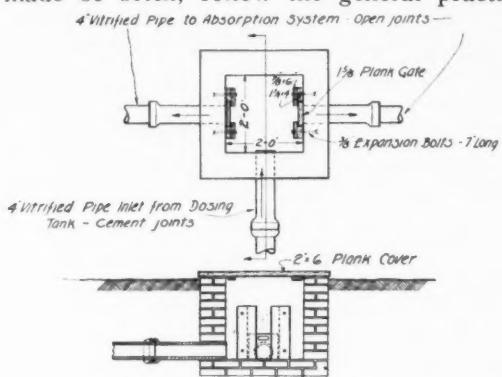


Fig. 7. The Diversion Chamber.

brick cisterns and place the inlet and outlet pipes as shown in the cut, to which the T joints should be attached, with the bell end uppermost.

Recent practice places emphasis on the need for depth of the septic tank. Better sedimentation is secured with the 6-foot depth than in shallower designs of the same capacity.

Double Chamber Tanks.—The double chamber

(Continued to page 128)

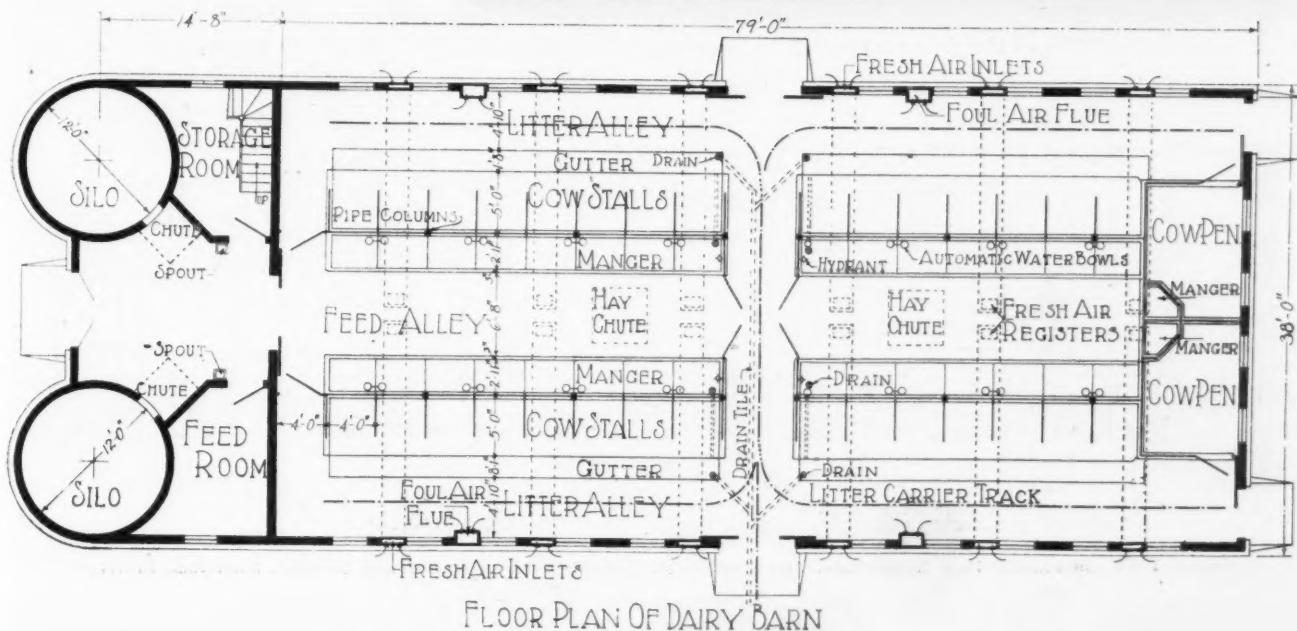


New Dairy Barn for the J. J. Hill Estate

A COW house of unusual "class" has been erected on the farm of Mrs. J. J. Hill near St. Paul, Minn. The accompanying photographs and floor plan give a good idea of its general appearance and arrangement, and the completeness of its appointments. It is surely a worthy residence for the thoroughbred bovines which will occupy it.

The architects, The Louden Machinery Co., have given this barn a width of 38 feet, which provides nicely for the extra space that is so desirable around a show herd.

Notice the very complete layout of water piping, drains, ventilating flues, carrier track, stanchions, etc.



Farm Buildings To Aid Food Production



This Swine Establishment Saves Steps

CORN CRIB, FEEDING FLOOR, PLATFORM SCALE AND LOADING CHUTE BUILT IN CONNECTION WITH WINTER COMMUNITY HOG HOUSE.

By E. E. Shugart

AM enclosing to you photograph and ground plan of a combination saw-tooth hog house, corn crib, granary, feeding platform, and scale house which I have just built on one of my farms. I think it is one of the best arrangements I have seen.

The plan will explain itself pretty well, but I will add a few remarks that will explain it a little more fully. The hog house proper was laid out to accommodate eighteen sows, but I used two stalls in one end to give plenty of room around the watering place and another stall in the other for the scale box and small store room; so, as it is arranged now, there are fifteen stalls.

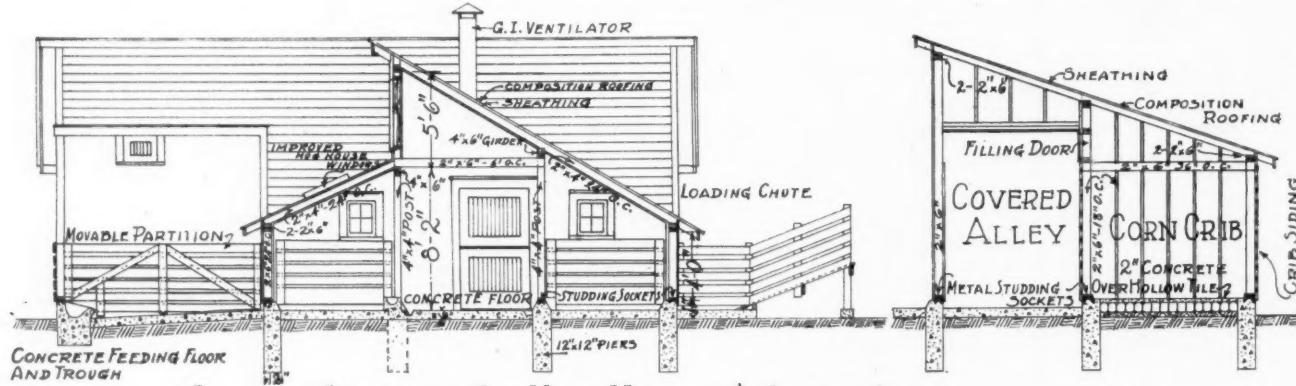
The ventilation is taken care of by two combination smoke stacks and ventilators in the roof and a slat ventilator built in the east end above the door. This ventilator is fitted with a door on the inside so that same can be closed up tight when necessary. All the gates between the stalls are removable so that one or more of the pens can be thrown together.

The feeding platform can also be used as outside yards by putting in the cross gates. Every 6 feet there is an angle iron bolted to the side of the house, which holds one end of a 2 by 4, the other end being fastened

to the fence on outside of platform. The 2 by 4 acts as a brace to hold the fence rigid and also serves as a means of fastening the top of gates. The lower part of the gates are held in place by 2 by 4 braces on the gates dropping in holes made to fit them in the concrete platform. In order to remove the gates it is only necessary to loosen two bolts and lift the gates out.

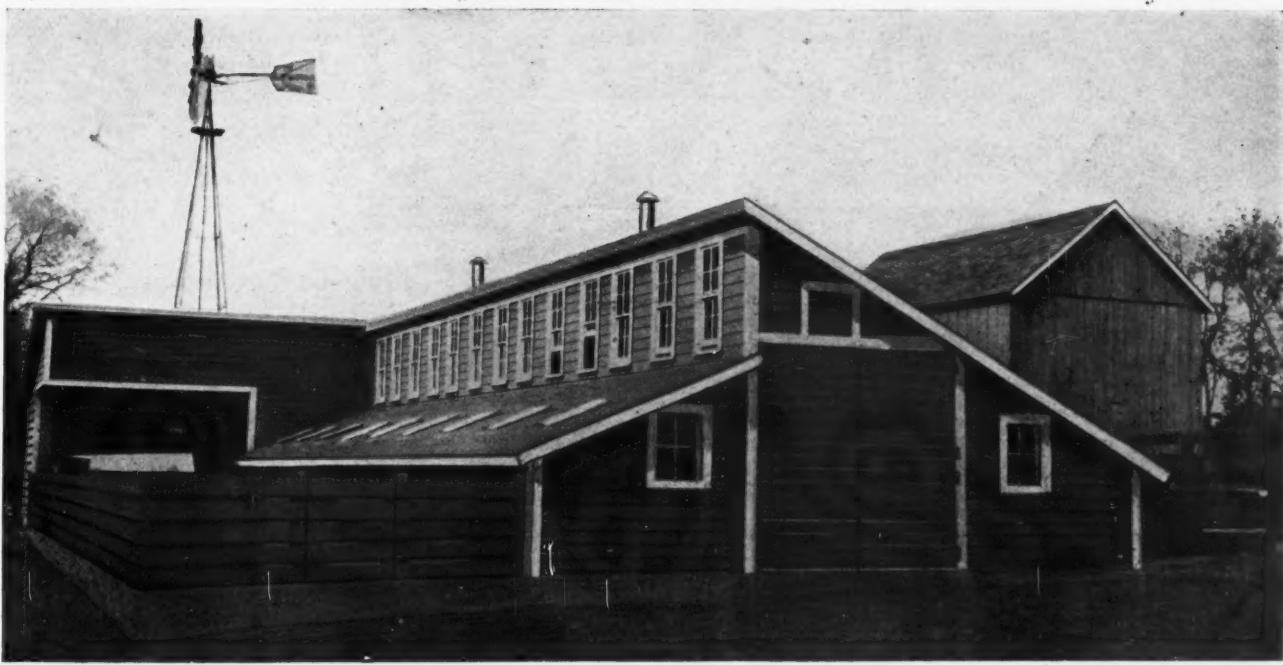
The scales are under cover in the passageway between the hog house and granary and are fitted with a swinging gate at each end, the one at the north end swinging inside so as not to interfere with the sliding door which closes the passageway up tight. This passageway is all under cover and makes a fine place in bad weather for grinding, etc. The gate at the north end of scales swings out and joins small gate at loading chute, making it handy for loading.

The sleeping pens, corncrib and granary are all floored with hollow tile with 2 inches of cement over. The corn crib and granary have studding sockets set in the concrete on top of wall. The sills in the hog house are bolted down to the top of foundation wall. There is a slat door between the corn crib and granary fitted with a tight door on the granary side so as to make it tight when granary is full of small grain.



CROSS SECTION OF HOG HOUSE & CORN CRIB

Section Thru Community Hog House from South to North and Thru Covered Alley and Corncrib from East to West.



16 Pen Hog House with Convenient Arrangement of Cornerib, Covered Alley and Platform Scale All Built Connected on Farm of E. E. Shugart, Near Council Bluffs, Iowa.

The roof is shingled with composition shingles and the siding is fir drop siding. Everything is of the best materials and is built in the best possible way. All the foundation walls are reinforced.

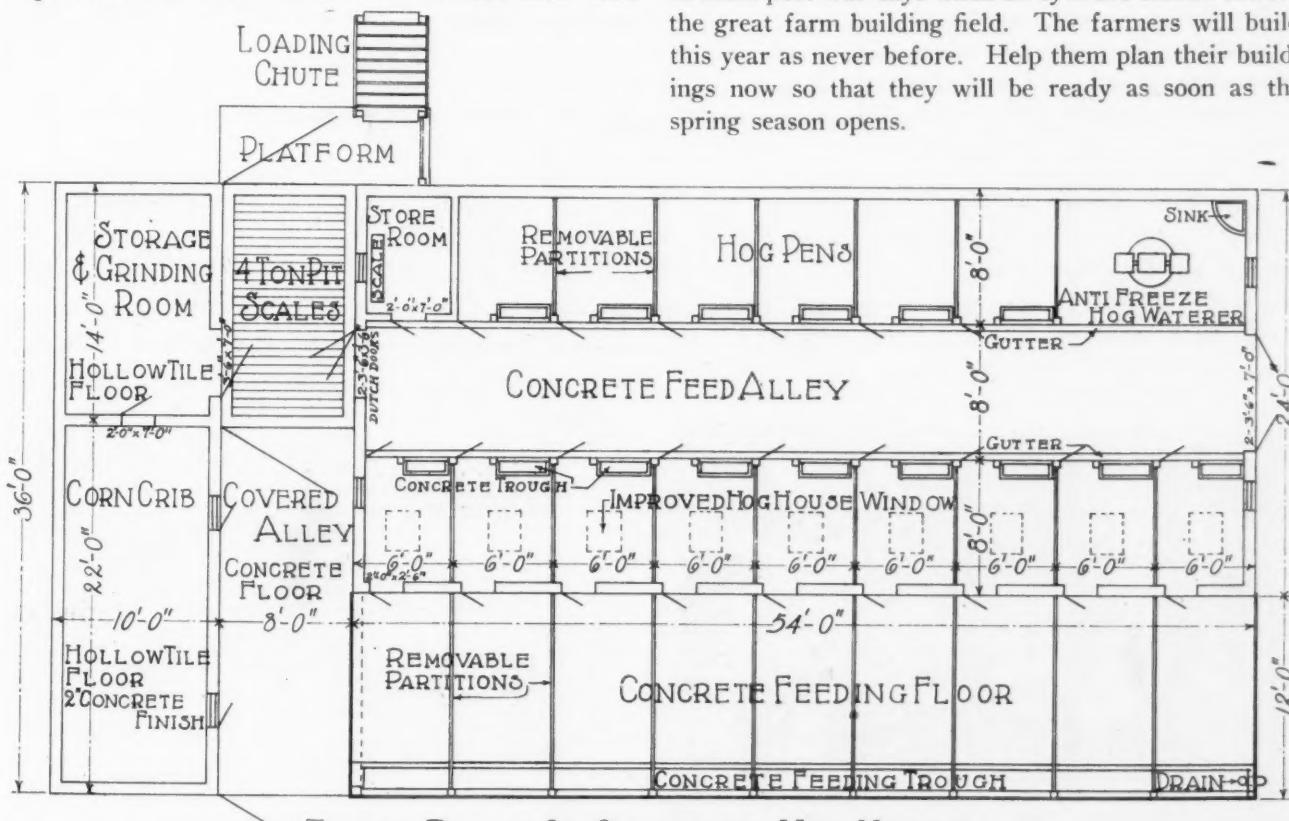
The floor in the hog house slopes both ways to the center, so as to drain into the sewer which runs out under the feeding platform. The feeding platform slopes to the outside and also to the east end. The

feed trough also slopes to the east end and is fitted with drain in the end.



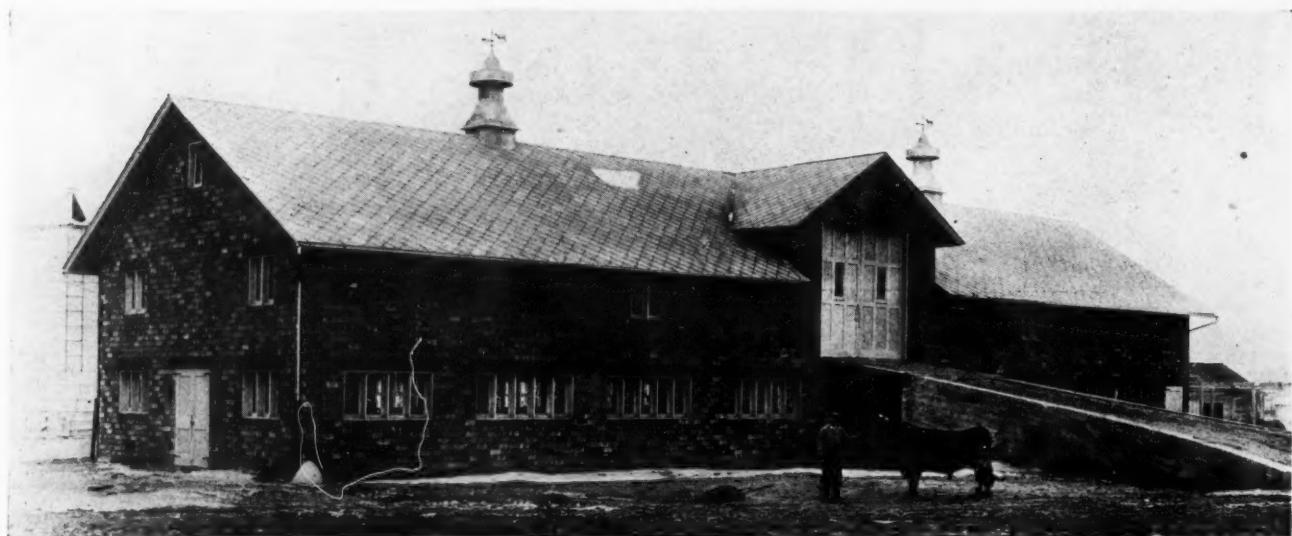
Don't Miss the February Farm Buildings

NEXT month comes our Annual Farm Building Number—better than ever this year—more practical buildings—better illustrated—just what you want in these post-war days when all eyes are turned toward the great farm building field. The farmers will build this year as never before. Help them plan their buildings now so that they will be ready as soon as the spring season opens.



FLOOR PLAN OF COMPLETE HOG HOUSE

Arrangement of Swine Establishment of E. E. Shugart.



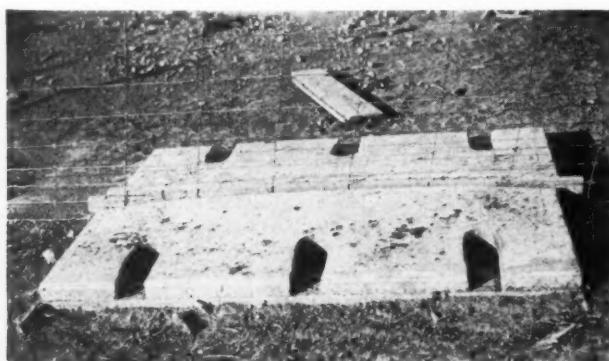
Maternity Barn at Yellow Springs, Ohio, Size 36 by 122 feet. Containing Twelve Cow Pens, Four Bull Pens and Six Calf Pens. An Example of Fire-Resistant Barn Construction.

Fire-Resistive Stable

THE maternity barn at Yellow Springs, Ohio, illustrated above, is an interesting example of vitrified clay tile construction. With its masonry walls and asbestos shingle roof, it is entirely protected from the external fire hazard.

This barn was designed by Hunt, Helm, Ferris & Company. The diagram shows the arrangement of the stable floor. There are twelve cow pens, 9 by 10½ feet, four bull pens, 10 by 10½ feet, and six calf pens, 8 by 10½ feet. A concrete bridge reaches the hay mow floor without appreciably darkening the stable.

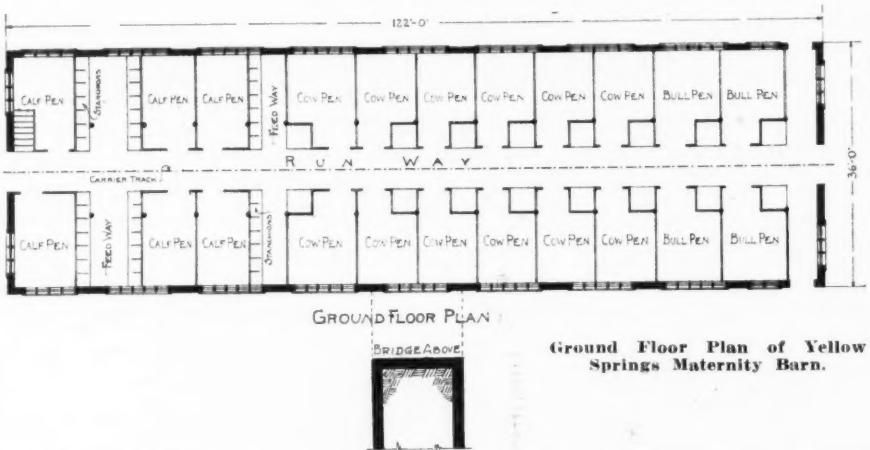
A generous amount of window area is provided, assuring a well lighted stable. The method of grouping the windows improves the appearance, tho adding somewhat to the cost. The walls are 8 inches thick, laid up of 8 by 5 by 12-inch tile.



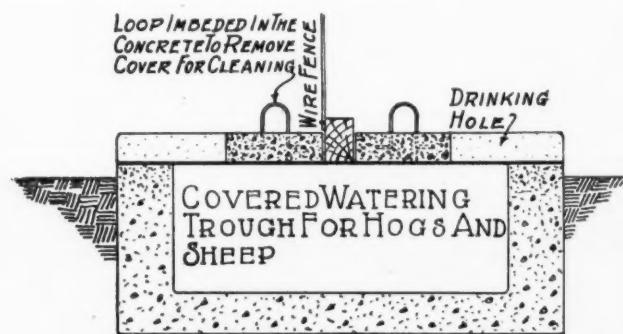
Photograph and Cross-Section of Covered Watering Trough for Hogs and Sheep. This Is Placed Under a Fence so as to Serve Stock in Two Fields. The Holes Are About 3 Inches Wide, the Idea Being to Make Them Just Big Enough to Let the Animal Get His Nose Into the Water. A Float Valve Keeps the Water Level Right Up to the Underside of the Slab.

This Trough Lets the Nose in, but Keeps the Feet out

Hogs will make a wallow of the average field water trough, but not of this one. It has a concrete cover with drinking holes just large enough to let the animal



get his nose thru to the water. The size to make these holes will depend a good deal on the kind of animals to use this trough. A hole plenty big for a Tamworth, would let a Berkshire die of thirst.



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FARM BUILDING PLANS



Blue Prints of Silos and Sheep Sheds

FULL PAGE PLATE PHOTOGRAPHS (PAGES 54 AND 59) ILLUSTRATE CAPACITY SILOS AND ALSO SENSIBLE FEEDING SHELTER FOR SHEEP, AND THE BLUE PRINT SUPPLEMENT SHOWS THE CONSTRUCTION IN DETAIL OF THESE

THE silo is a good thing no matter what it is built of. Whether of wood staves, vitrified tile, paving brick, cement staves or monolithic concrete, the silo, if properly built by mechanics who understand their business, will give the farmer good service and prove the best money-making building around the place.

On the first two pages of the blueprint supplement are presented some fundamental details of construction for different types of silos. This information can easily be supplemented by that contained in the handbooks and illustrated catalogs, issued by the enterprising manu-

facturers of silo materials. We would urge every one of our readers who is handling rural work to specialize a little bit at this time on silos, and begin his campaign right now, getting out among the farmers and talking silos for the coming building season.

A SENSIBLE SHEEP SHED. The photograph on Page 59 and the third and fourth sheets of the blueprint supplement illustrate the type of sheep shed which farmers like. It can be built either with straight

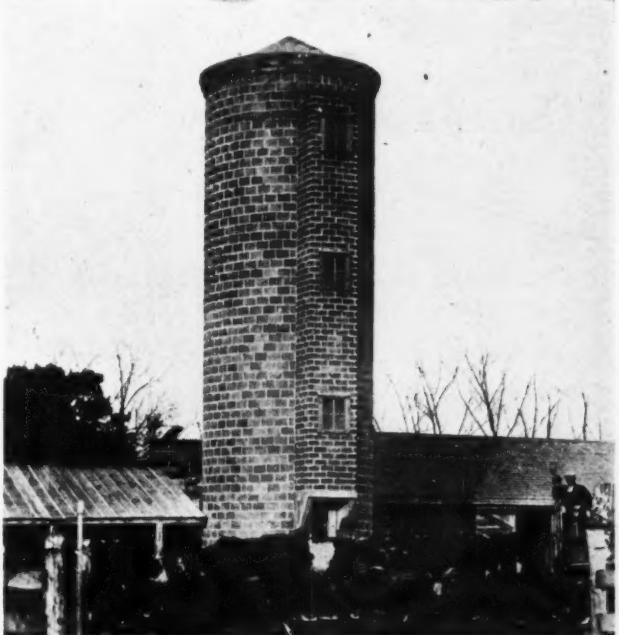
gable roof or monitor roof. The interior space is divided into several large pens so that the flock can be managed in sections.

With the high price of wool and mutton, a good many farmers are taking up sheep-raising, and they should understand the importance of proper housing for the flock.

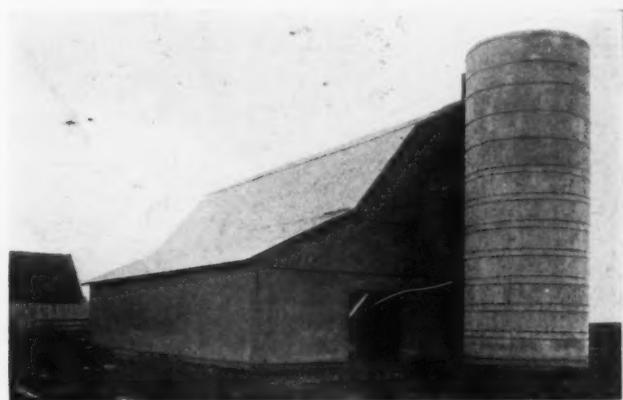
The blue prints show a practical layout and a building that doesn't require a very large investment to erect.

Full Page Plate Photographs of Blue Print Buildings

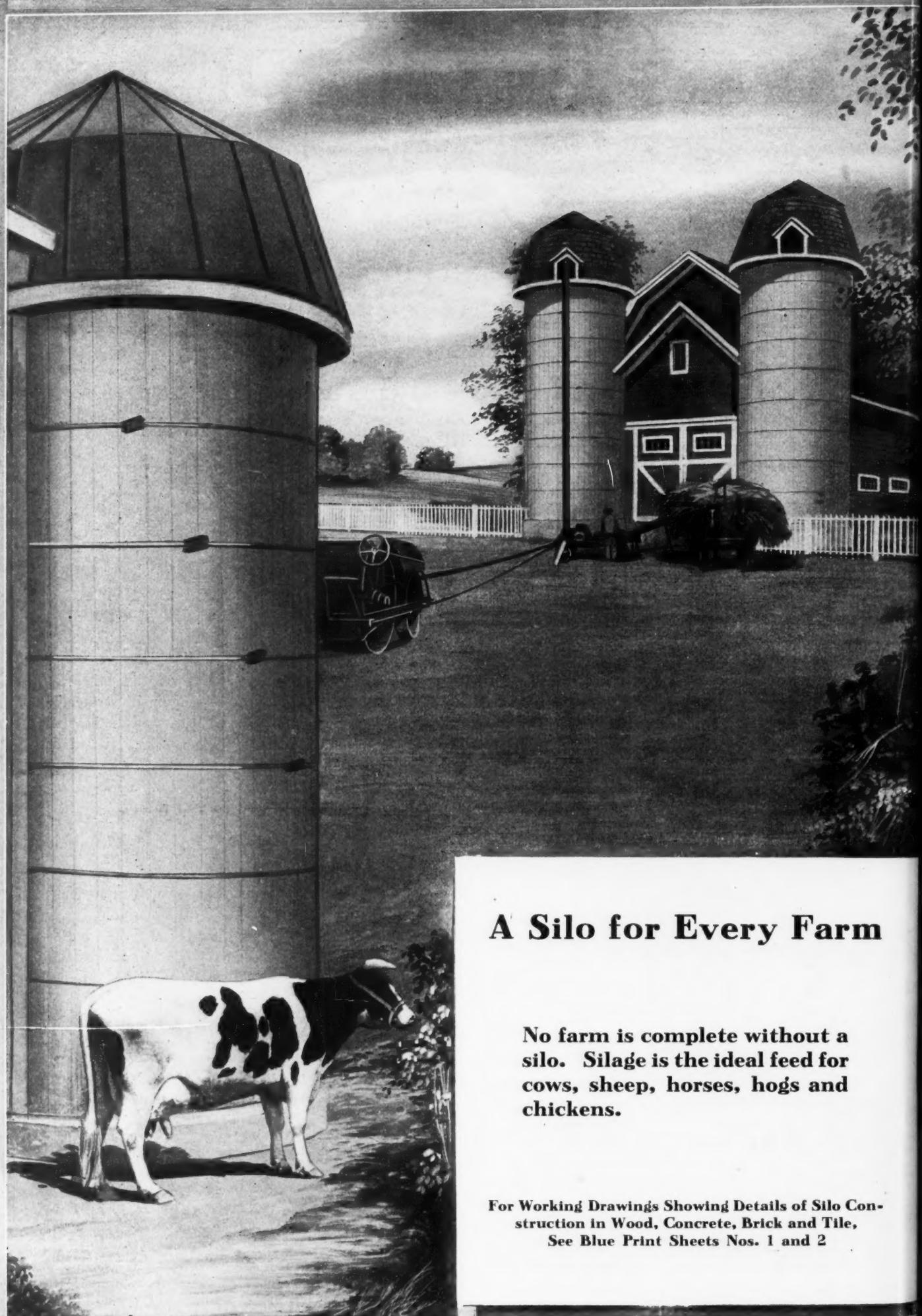
A Silo for Every Farm	Page 54
Sheep Feeding Sheds	Page 59



Vitrified Tile Silo of the Modern Type, Showing Tile Feed Chute and Masonry Roof.



The Cement Stave Silo Continues to Grow in Popularity. It Offers Rural Builders Special Business Opportunities.



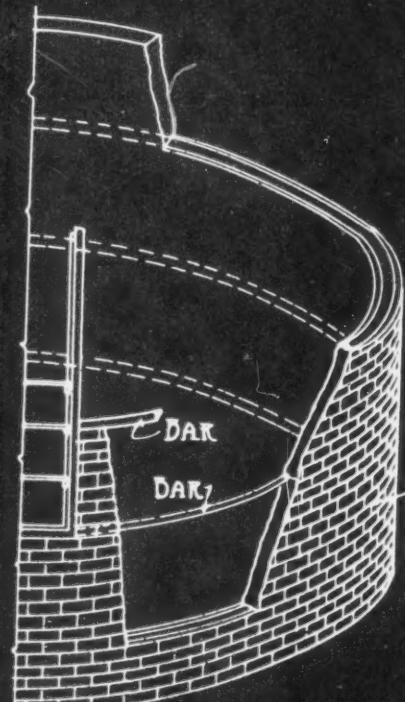
A Silo for Every Farm

No farm is complete without a silo. Silage is the ideal feed for cows, sheep, horses, hogs and chickens.

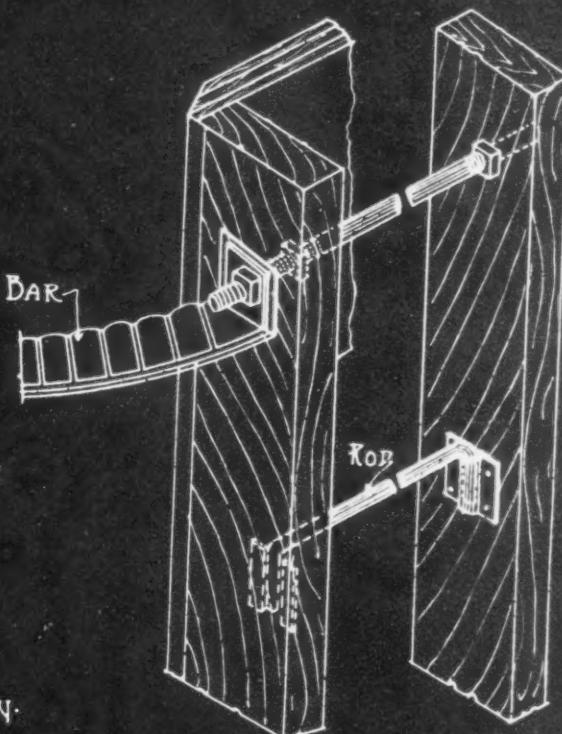
**For Working Drawings Showing Details of Silo Construction in Wood, Concrete, Brick and Tile,
See Blue Print Sheets Nos. 1 and 2**



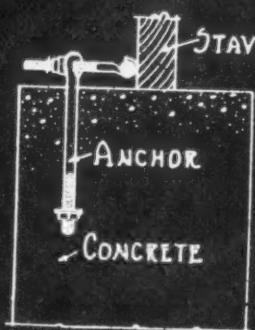
AMERICAN BUILDER BUILDING PLANS



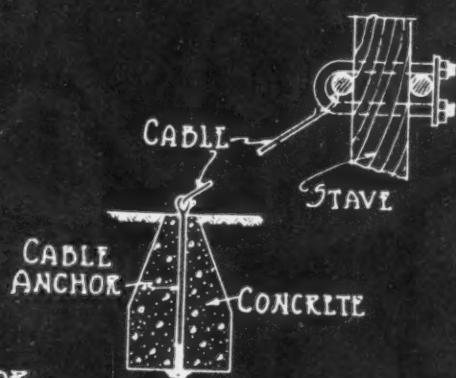
ELEVATION & SECTION.



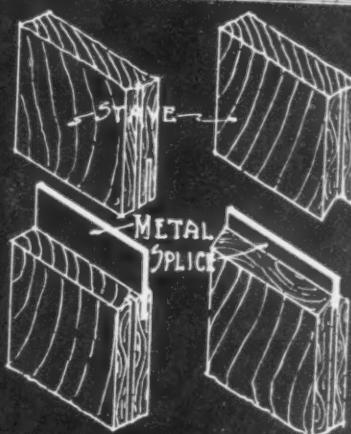
DOOR JAMD.



FOUNDATION ANCHOR.



WOOD STAVE SILO.



METHODS OF SPLICING STAVES



FIG. 1



FIG. 2

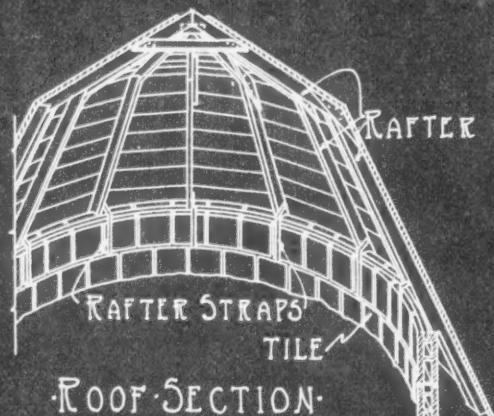
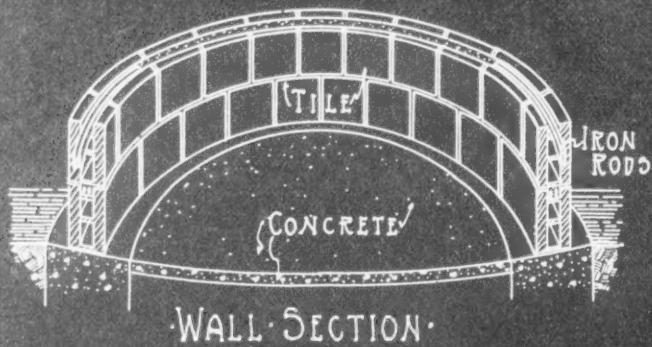


FIG. 3.

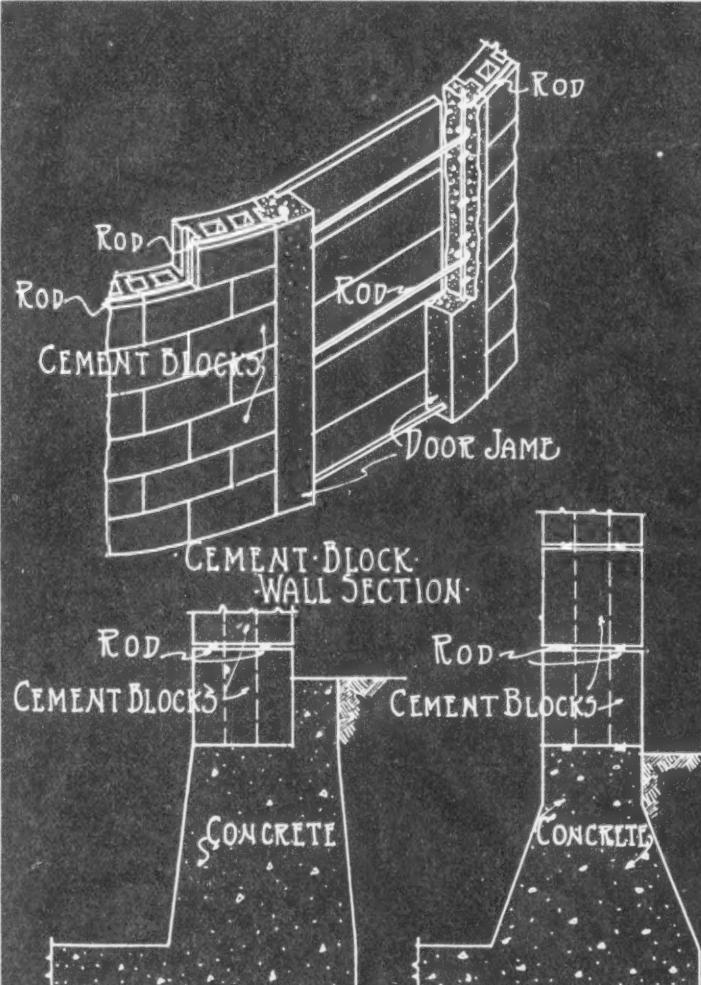
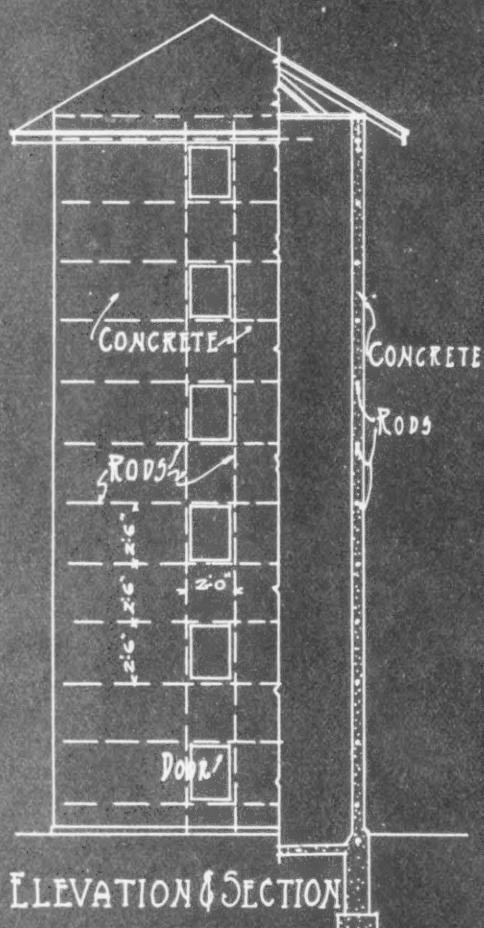
LAYING OUT A SILO FOUNDATION.

SILO CONSTRUCTION DETAILS. SHEET NO. 1

AMERICAN BUILDER BUILDING PLANS



HOLLOW-TILE-SILO.

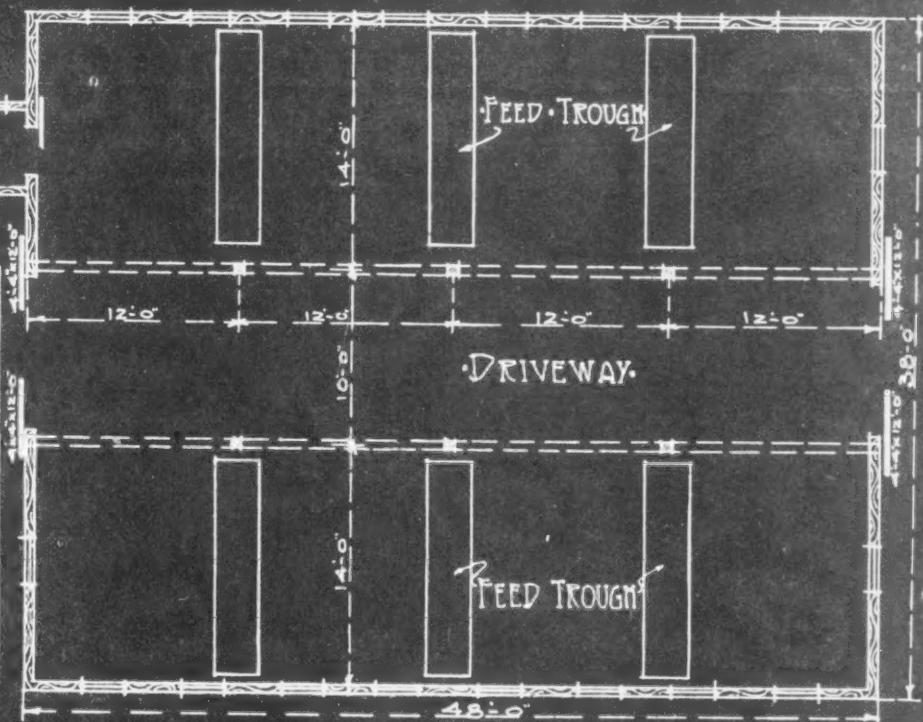


REINFORCED-CONCRETE-SILO.

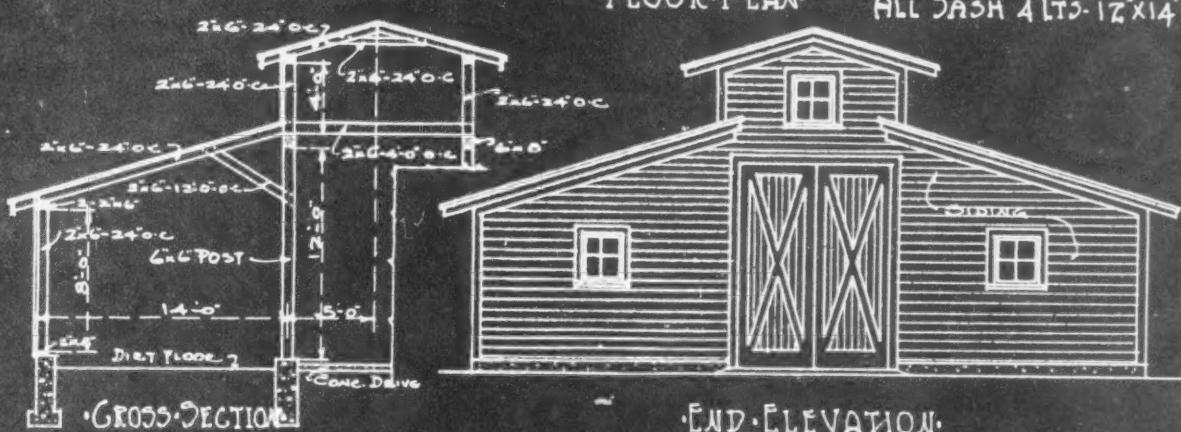
CEMENT-BLOCK-SILO.

SILO CONSTRUCTION DETAILS. SHEET NO. 2

AMERICAN BUILDER BUILDING PLANS

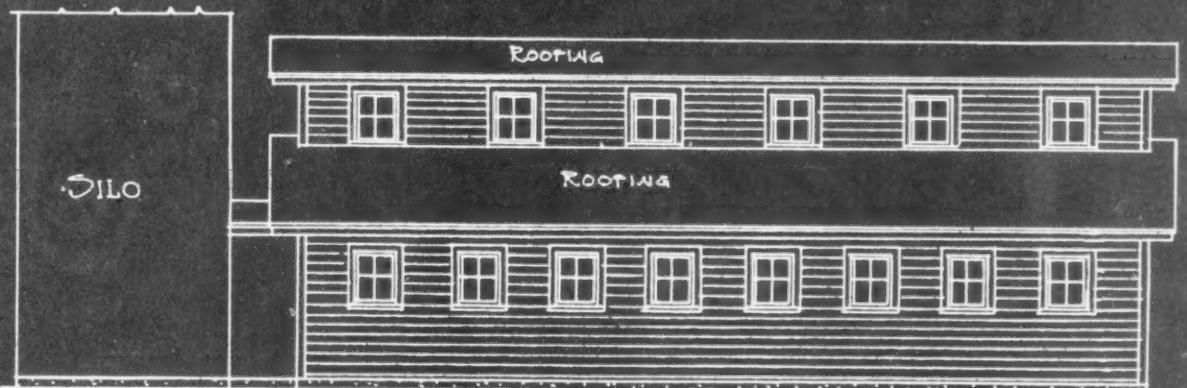


ALTERNATE CROSS SECTION
OMITTING MONITOR & MAKING
STRAIGHT GABLE ROOF.
SCALE 1/4 INCH = 1'-0"



FLOOR PLAN. ALL DASH 4 Lbs. 12" x 14"

END ELEVATION.



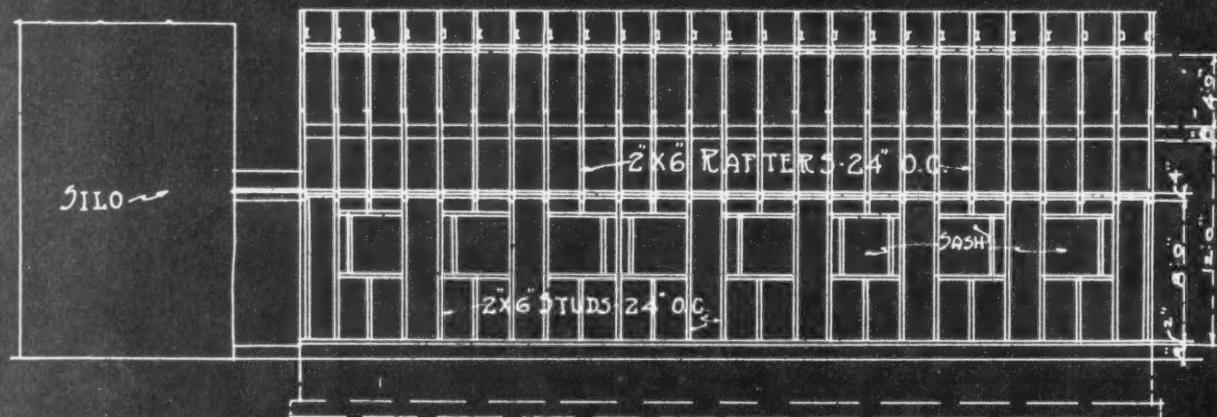
FRONT ELEVATION.

SCALE $\frac{3}{8}$ INCH = 1'-0"

SHEEP FEEDING SHED

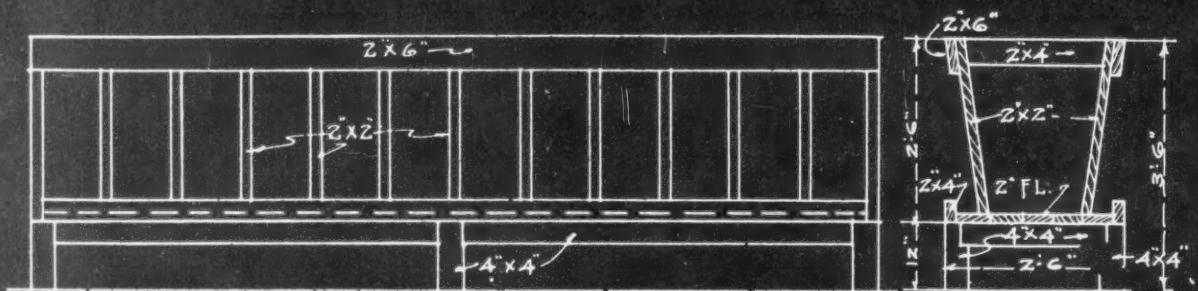
SHEET NO. 1

AMERICAN BUILDER BUILDING PLANS



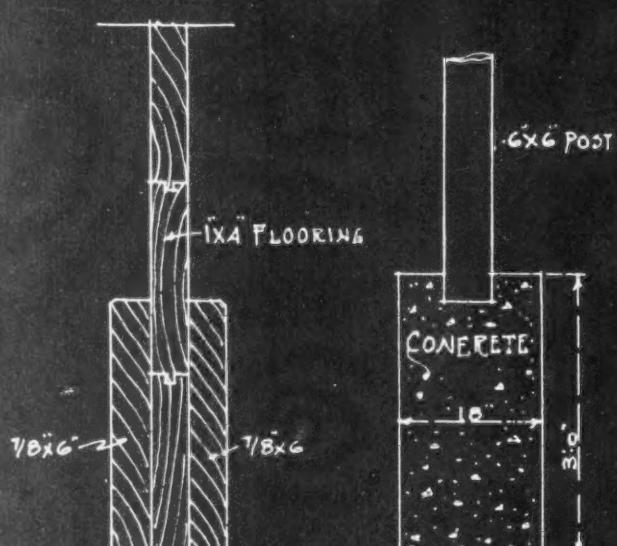
SIDE FRAMING PLAN.

SCALE $\frac{3}{8}$ " = 1'-0"



FEED TROUGH.

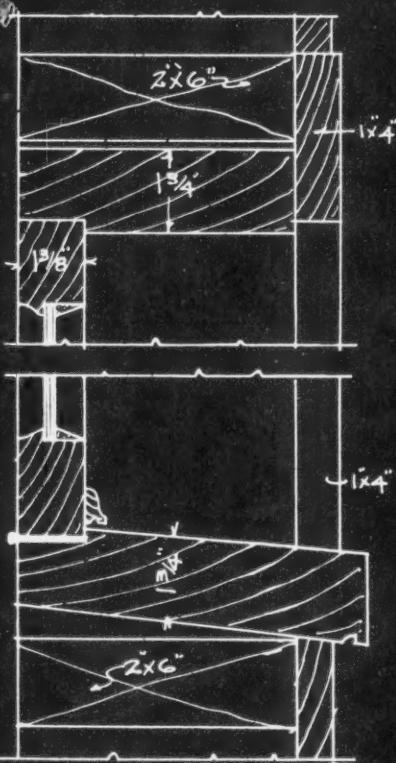
SCALE $\frac{3}{8}$ " = 1'-0"



SLIDING DOOR

POST FOOTING

SCALE $\frac{1}{2}$ " = 1'-0"



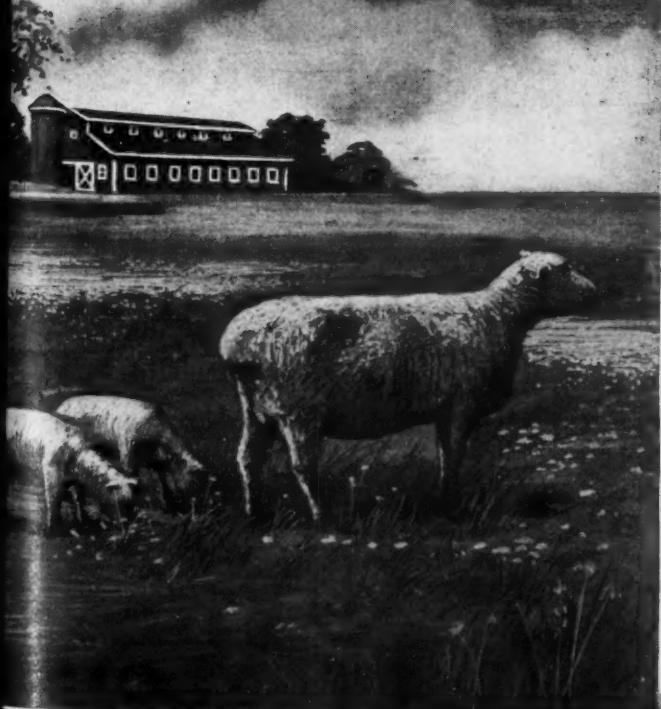
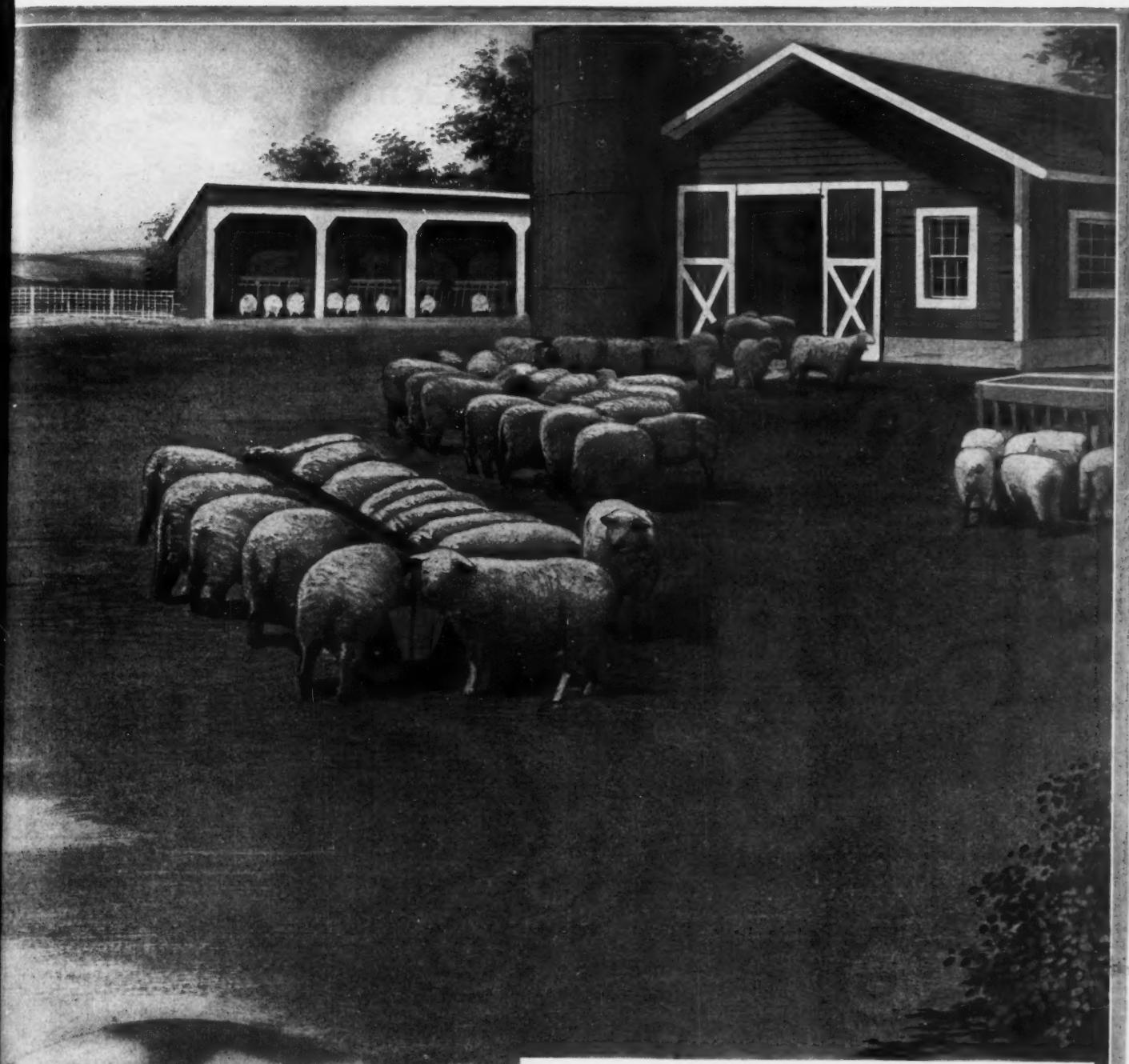
SASH FRAME DETAIL

SHEEP FEEDING SHED

SHEET NO. 2







Sheep Feeding Sheds

Size, 38 ft. by 48 ft.

**For Working Drawings see Blue Print Sheets
Opposite, Nos. 1 and 2**

Doors More Than Two Centuries Old in Tucson Mission

ONE of the most remarkable instances of the permanency of wood construction has been found by John H. Kirby, president of the National Lumber Manufacturers' Association, in the romantic and picturesque old mission church of San Xavier Del Bac, nine miles from Tucson. The huge wooden doors which have swung open to countless thousands are today performing the service they per-

able to reach the Santa Cruz Valley and take up the work there.

In 1800 the Right Rev. Henry Granjon was appointed bishop of Tucson. He secured title from the government for the land on which the mission stands, and restored the building which had fallen into ruin to a certain extent. Since that time the work of the mission including a school for the Indians on the reservation which entirely surrounds it has continued regularly.

The pine doors which have done service for so long a period were, according to tradition, a part of the original building completed in 1699. When this original structure was demolished in 1793, the doors were saved from the ruins and made a part of the present building, which is built of brick and stone and is of a Moorish-Byzantine type of architecture.



San Xavier Mission, Tucson, Ariz., Founded in 1692.

formed when the famous old mission was built, more than two hundred years ago.

Founded in 1692, the mission, which many claim to be even more beautiful than the missions of California, was conducted continuously by resident Jesuits until 1751. Then for a few years it was administered as a visita from Tubac, and in 1767, following the Spanish expulsion of the Jesuits, was turned over to the Franciscans. This order continued the work of the mission until 1827, when Mexico expelled all the religious orders.

For a number of years the mission was practically abandoned. After the Gadsden purchase in 1854, it came into the diocese of Santa Fe, but not until 1866 were the missionaries from the New Mexico city



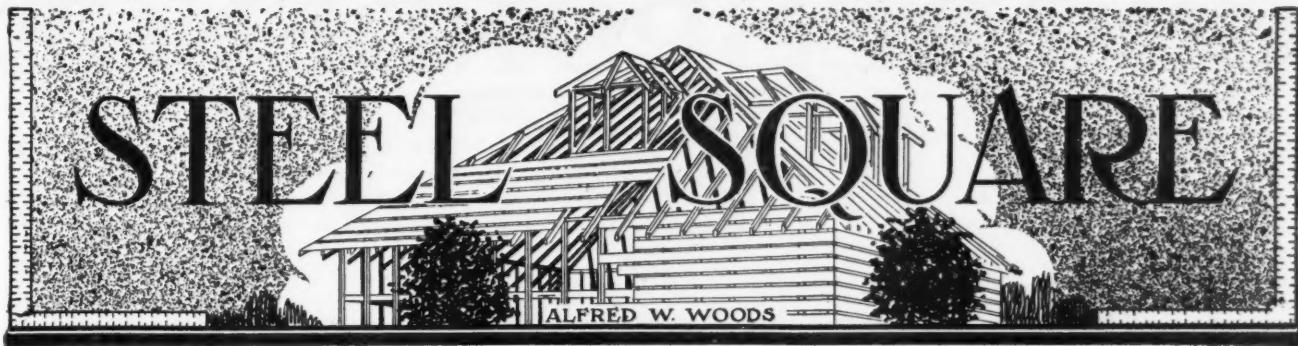
Southern Pine Doors in Use at San Xavier Mission Since 1699.



Interior of San Xavier Mission.

The pine doors are today in virtually as good condition as when they were first hewn from the trunks of the trees, a striking example of the durability and serviceability of wood as construction material, whose merit was recognized even in early times as it is today, when the lumber industry has grown to such enormous proportions in the United States.

HOW the blue prints and the house and barn designs in this magazine to all in your community who ought to be planning to build. They will be interested.



Problems of Roof Framing Solved

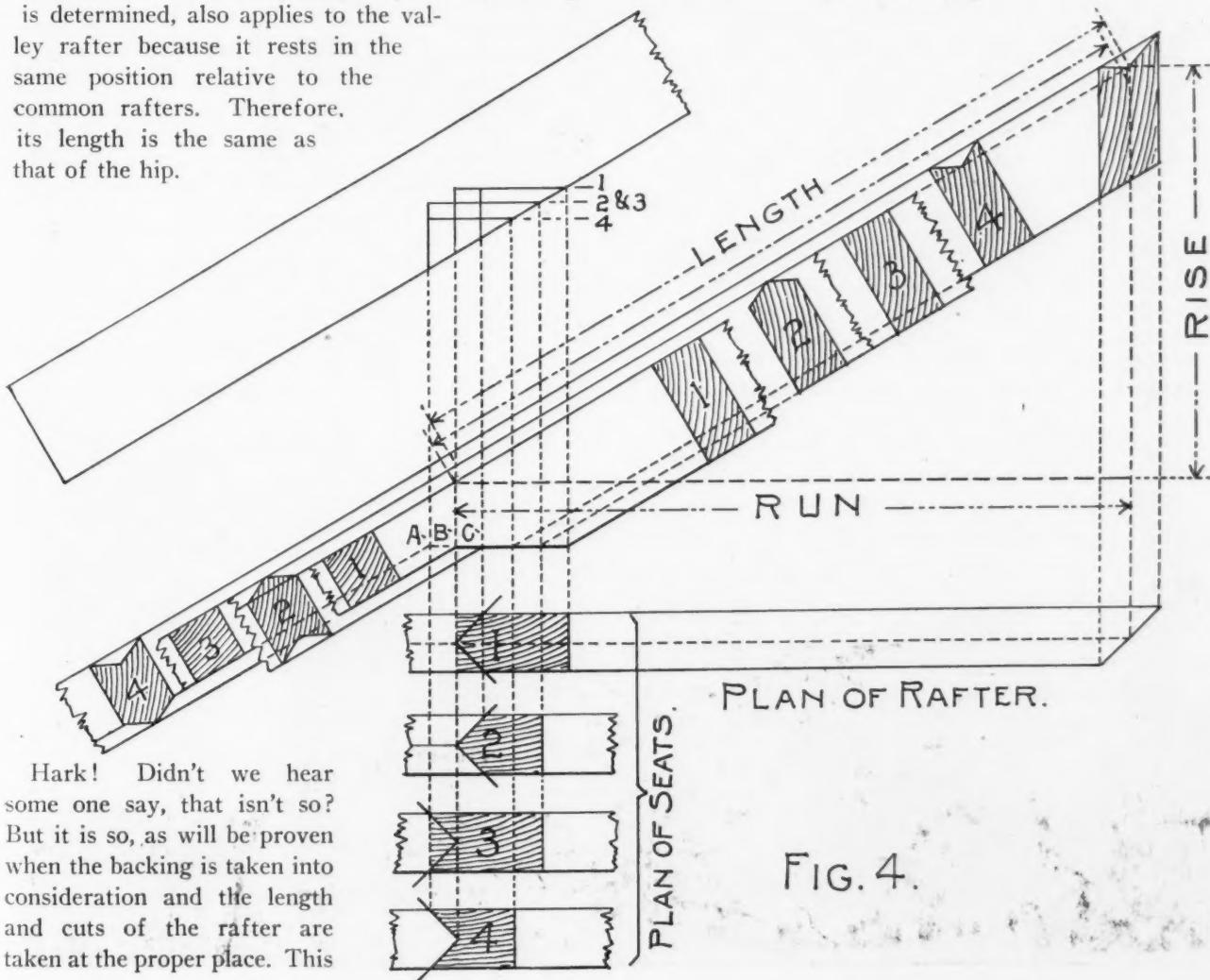
THIRD ARTICLE—THE BACKING OF THE HIP AND VALLEY AND THE EFFECT IT HAS IN THE FRAMING UNDER VARIOUS CONDITIONS.

NOTE: This is the Third of a Series by Mr. Woods. The Fourth will appear in an early issue.

WE COME now to the next step of our work. In the previous illustration, we showed how the lengths of the common and hip rafters are determined by the aid of the common steel square. Of course, there are other ways of getting the lengths with the square, but whatever figures are taken, they must be to the ratio of the full scale for one foot run of the common rafter, as shown in Fig. 3. In that illustration, the hip is shown in connection with the common rafter. The same principle by which its length is determined, also applies to the valley rafter because it rests in the same position relative to the common rafters. Therefore, its length is the same as that of the hip.

is a vexing little problem; 'tis true it does not amount to much, there is not one job in a hundred where the carpenter takes the pains to back his hips or valleys. Whether he does or not, allowance should be made in the depth of the seat cut; that is, where they get off without his knowing it and after are cut and ready to set up in place, then he finds that something is wrong and they are either blocked or cut down, as the case may be. Now, isn't that so?

(Continued to page 118)



Hark! Didn't we hear some one say, that isn't so? But it is so, as will be proven when the backing is taken into consideration and the length and cuts of the rafter are taken at the proper place. This

FIG. 4.

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

Essay Contest on Home Building

To the Editor: Council-Hill, Okla.
I have planned to put on a little advertising stunt in our local school. My plans are to offer a prize to the one that writes the best essay on home building, so I'm going to ask you to furnish me with a list of subjects that you think would fit the occasion. I have been a reader of your journal for quite a while, so I feel free to ask favors of you.

S. M. GLOYD.

Per Dan Balton, Mgr.

Answer.—We congratulate you on this little advertising stunt. Essay writing on home building will certainly turn the thoughts of the school children and of their parents toward home building at this time.

Complying with your request, here are a few topics which might be used:

Home Building and Nation Building.

The Home Owner is the Best Citizen.

Home Owning Promotes Thrift.

Home Building Helps the Community.

The Modern Home, Its Exterior Design.

The Modern Home, Its Arrangement.

The Modern Home, Its Decoration and Furnishing.

Modern Conveniences in the Home, Including Water Supply, Sewage Disposal, Basement Heating Plant, Improved Lighting Systems, Built-in Furniture.

Fire-Safe Home Building (bringing out proper construction details to make a wooden house fire-safe).

Keeping the Home in Repair.

Improvements Around the House to Make it Attractive.

The Cost of Home Building (materials figured not in money but in terms of farm crops, showing that the present prices are not high).

Methods of Financing the Home Building Enterprise.

Trust that these suggestions may be of some service to you.

EDITOR.



How Best to Bore Thru Plate Glass

To the Editor:

Persia, Ia.

I would like a little advice from some of the brothers as to drilling a hole in plate glass; also a few plans on self-feeders for swine.

THOS. E. COLLINGS.



Barbecue to Celebrate New House

To the Editor:

Clements, Kan.

I am sending you a photograph of a brick veneer house built and planned by myself for Wm. Mercer, on his ranch ten miles south of Clements. The size of this house is 36 by 42 feet—two stories high—attic and basement. It is finished thruout and fitted modern in every respect, including self-contained electric plant, hot and cold water, bath, etc., and a vapor heating plant.

This picture was taken during the barbecue which Mr. Mercer gave in honor of his house. There were hundreds of people from all parts of the country. Several speakers were on the program, among them Mr. Capper, who had the floor during the taking of this picture.

A. H. BITNER,
Contractor and Builder.



Photo Snapped on the Occasion of the Mercer House Warming, Near Clements, Kans.

Wants Wrecked French and Belgian Cities Rebuilt of Concrete

To the Editor:

The chief thing that must appeal to the men who have the rebuilding of Europe in their mind is the materials to be used. Here are villagers whose houses have been turned into disorganized heaps of stone. The outlines of the streets have been destroyed. The title deeds to the homes have been lost. Thousands of families have lost all their individual hold on life. We cannot follow the Kultured plan of destroying a man's house and killing his wife in order to offer his daughter some bargains in millinery. But it is honestly to be regretted that some of the same medicine could not be served out to the Hun villages on the Berlin Road in order to demonstrate how it feels.

The several things that must occur to a man who considers the subject are the materials at hand, the cost of building, and the ability of the inhabitants to do it themselves. Most of the destroyed buildings were of stone. We cannot expect that they will take to wood, even were we able to supply the millions of feet required. Village houses in France and Belgium are simple. The people are accustomed to drudgery beyond any labor Americans can imagine. These houses were built at any time from that of Columbus down to Napoleon. Thousands of men who might have rebuilt them or who might have worked on the public roads are no longer living.

What machinery is there that can better aid in rebuilding

Fisher, Minn.

both the houses and roads of the devastated countries than stone crushers and cement mixers? The communes can aid each village to purchase a crusher and mixer. The ancient stone walls can be broken into suitable size for mixing. The men and women can join forces in pouring the walls of each new house and in conforming to the architecture of the country with the modern improvements pertaining to sanitation that the government may indicate. Beginning with the sections least destroyed they can in time reclaim the territory using the experience to better the work. The stone walls which were blown apart by the German cannons can rise again to shelter the people of France and Belgium, and prevent the extra cost of bringing in materials from abroad. Concrete hollow walled cottages with slate roofs, and possibly concrete floors where there is no cellar required, will more than satisfy people used to the simple life of hard-working villagers and peasantry. The machinery can be used afterwards to supply road material, which heretofore has been cracked by hand.

There would seem an excellent chance for manufacturers of crushing and mixing machinery to canvass the field, and there is no country whose present capacity to supply, or whose reputation is in such good repute, as this country. England has all she can do to replace her own machinery. A thousand sets of the above machinery, placed advantageously in the war-torn country where the local people can use it, will go far to begin the work which may take the next ten years.

JACKSON DEMARY.



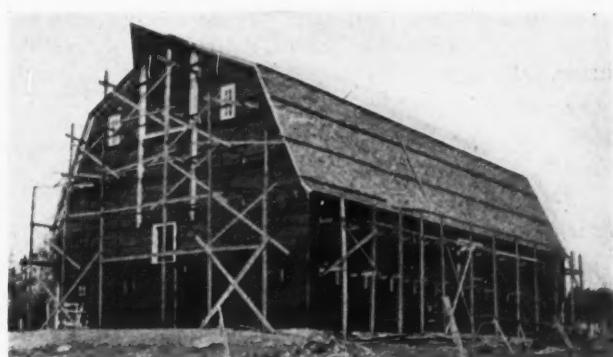
Big Barn Rebuilt

To the Editor:

Martin, N. D.

Enclosed find some views of a barn which was struck by a cyclone last August, one showing barn right after the storm, and one after rebuilding. The barn was 48 by 80 feet in size. Below is a picture of myself at the saw rig.

NELSON PREMO, Contractor.



How the New Barn Looked on the Engen Farm as Contractor Nelson Premo Was Rebuilding It After the Cyclone.



Correspondence Department

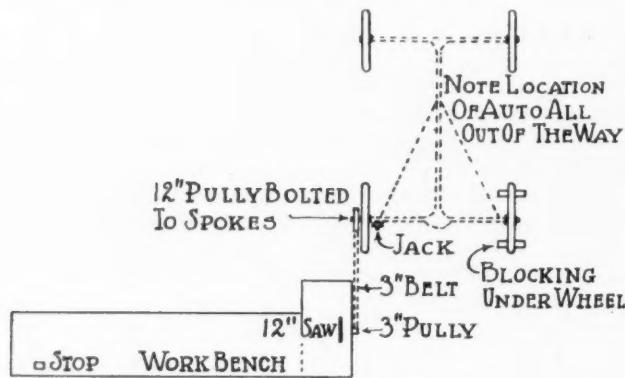
Let the Auto Do It

To the Editor:

Ryder, N. Dak.

Enclosed please find my subscription for another year to the AMERICAN BUILDER. I have been a reader for some time and do not like to be without it; in fact, I cannot afford to be without it, as I am greatly benefitted.

In hopes that it will be of interest to some of our brother carpenters I will send a sketch of how I get my auto to do all heavy sawing of studs, joists, rafters, etc. A rip saw put



Buzz Saw with Homemade Rig for Taking Power From Ford Car.

on the same mandrel will do all ripping, sizing of cornice material, getting out corner boards, and in fact, all that can be put on, and the cost is very small. Especially handy on barn construction.

In addition will say, I am about to build a house from one of your plans submitted in one of the last numbers of the BUILDER.

With best wishes for the future of the BUILDER, I am

H. REMME, Carpenter & Builder.



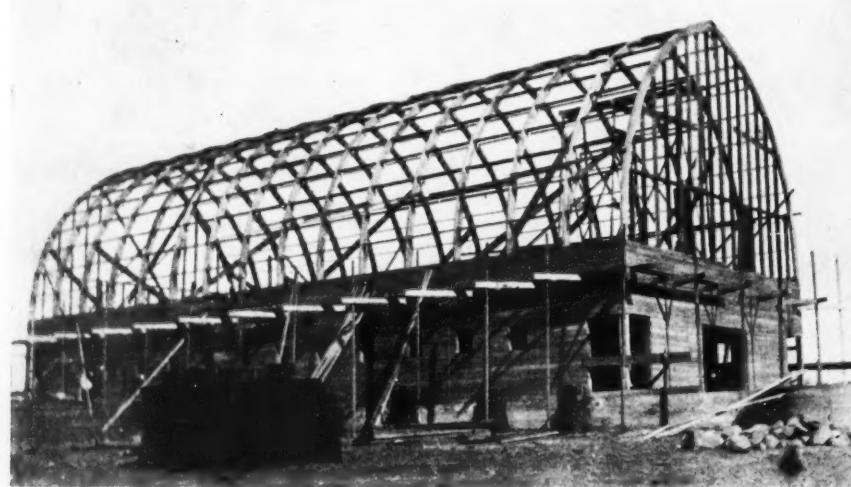
Built Up Timbers Just As Good

To the Editor:

New Salem, N. D.

Enclosed please find picture of a barn, with the main rafters set up, built for Frank Gaebe, one of our leading dairymen. The part you see is 34 by 30 feet, with a shed 34 by 20 feet, and a silo in each corner, all fixed up with steel stanchions on the inside. I did all the concrete work.

Gentlemen, here is a question. Would you advise using on a pile bridge (wooden one) a solid cap, 10 by 12 inches, resting on 5 piles, or to make up cap of 2 or 3 inch stuff, and the same for the girder? I put in a bid on two county



Good Looking Gothic Frame, Size 34 by 30, Put Up by R. E. Wolff on the Frank Gaebe Farm.

bridges, and was the lowest bidder, but was rejected because I stated if I was unable to get the solid timbers in time I would use made-up ones.

RICHARD E. WOLFF.



New Paving Conveyor Discovered in Use

To the Editor:

Easton, Pa.

I am sending you a photograph taken recently that may be of interest. It shows a sand and stone conveyor recently used on the extension of the William Penn concrete highway



Mechanical Conveyor Taking Sand and Gravel to Paving Mixer.

into the city of Easton. I believe this conveyor is one of the few that have been put in use. It saves considerable wheelbarrowing of sand and stone, makes the proportions more certain and gives much more room for the piling of sand and stone.

S. ROWLAND HALL,
Editor "Alpha Aids."



A Good Word From Alaska

To the Editor: November 19, 1918, Ketchikan, Alaska.

As yet I have not received my November number of the "AMERICAN BUILDER." I save the copies as a miser hoards up his shekels, so I would be greatly obliged to you if you would kindly send me another copy.

The "AMERICAN BUILDER" has been very helpful to me and interesting at all times and wish to compliment you upon the most excellent numbers you have gotten out in spite of the war and its adverse influence upon the building business thruout the country.

CLAUDE AIKENS.



Longs for Topical Index

To the Editor:

Mt. Vernon, Ohio.

Find enclosed \$2.00 for one year's subscription.

I am always anxious to receive the AMERICAN BUILDER, as there is something on most every page, and every issue that is interesting and helpful to the man who is engaged in the building business. For my part, I have no complaint to make about anything which appears in the paper. The blueprint sheets are all O. K., and I hope you will continue to insert them in the paper in a stationary form, for if they were loose I may lose some of mine. I keep all my journals on file and often get them out and look them over.

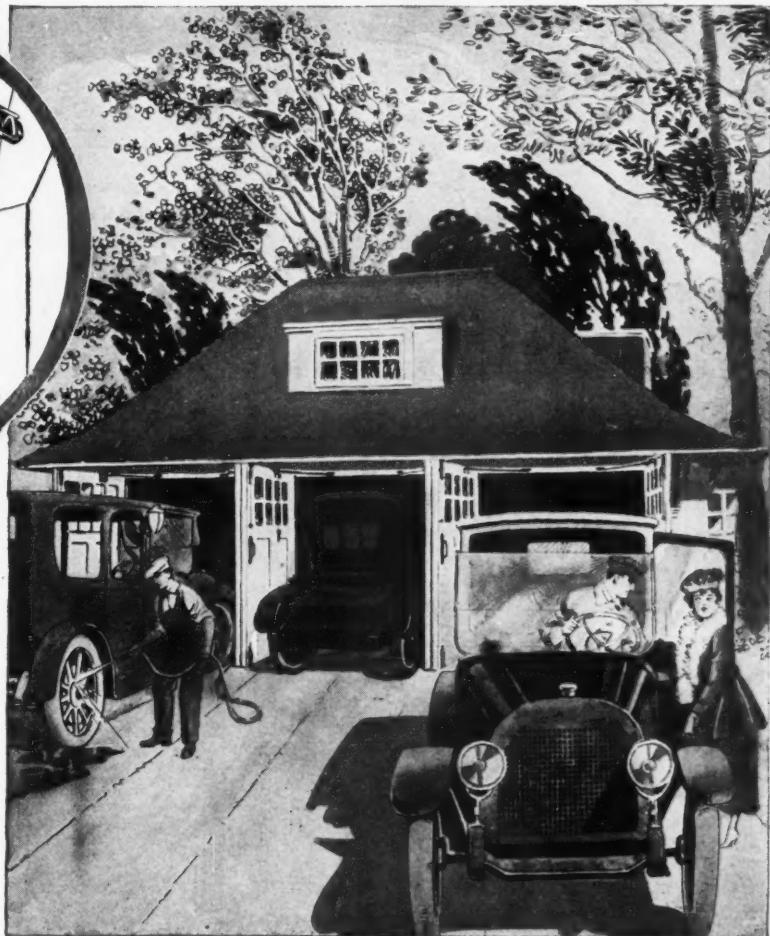
One thing I am sorry I did not do when I first subscribed is to keep an alphabetical record index of my own of the different important information, such as making new cement stick to old (in case of repairing sidewalks and cisterns), and the glue and sawdust preparation for filling cracks and crevices, and other such information.

(Continued to page 66)



When you build a garage you will spare no efforts to make it safe.

The Stanley Garage Door Holder No. 1774 locks the door open, thus preventing damage and injury which might result from the accidental slamming shut of swinging garage doors.



You Know This Hardware is Exactly What You Want Before You Buy it

The eating of the pudding is the only final test with many of your purchases. Not so, however, when you are putting up garages, because you know by experience that you can secure perfect satisfaction for all conditions of operating service by buying

Stanley Garage Hardware

It does everything you can ask the highest quality, best designed hardware to do—and a little more!

Send for Complete Catalog—Free on Request.

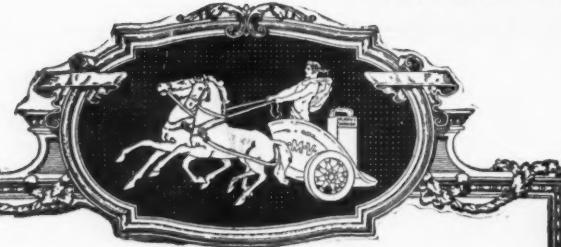
New York
100 Lafayette Street

The Stanley Works
NEW BRITAIN, CONN., U. S. A.

Chicago
73 East Lake Street

Manufacturers of Wrought Bronze and Wrought Steel Hinges and Butts of all kinds, including Stanley Ball Bearing Butts. Also Pulls, Brackets, Chest Handles, Peerless Storm Sash Hangers and Fasteners; Screen Window and Blind Trim-mings; Furniture Hardware; Twinrold Box Strappings and Cold Rolled Strip Steel.

Stanley Garage Hardware is adaptable for factory and mill use.



Let Prospective Clients Know You Use the Best Varnish

High quality builders go with high quality products. People know this. That is why you uphold your good reputation when you finish with

Murphy Varnish

"the varnish that lasts longest"

Use this widely-known varnish on *all* your work and tell people that you use it. Let people know that you stand for quality in materials and workmanship. There are *longest-lasting* Murphy products for *every* purpose.

Murphy Transparent Interior
Murphy Transparent Spar
Murphy Transparent Floor
Murphy Nogloss Interior
Murphy Semi-Gloss Interior
Murphy Univernish
Murphy White Enamel
Murphy Enamel Undercoating

Write for information.

Murphy Varnish Company

Franklin Murphy, Jr., President

Newark

Chicago

Dougall Varnish Company, Ltd., Montreal, Canadian Associated

ANA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Correspondence Department

(Continued from page 64)

I have been waiting for an answer to Charles Edwards' inquiry as to what to use to kill the wood borers. I have taken turpentine and put in a small oil can and thoroly filled the small holes in the wood made by the borers, and have been successful. This, of course, was only on a small scale. Where there is a large area to go over, it would be rather expensive. Some of the suggestions by John Upton, I think, would be all right.

Success to the AMERICAN BUILDER.

L. M. WORKMAN.



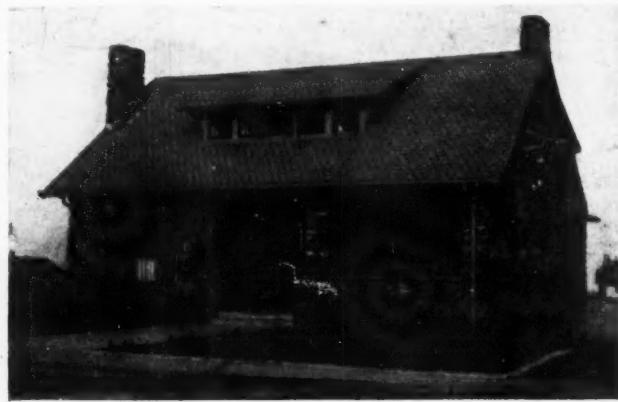
This House an Advertisement All Around

To the Editor:

Athens, Ga.

Enclosed you will find \$2.00 to be credited to my account for the BUILDER, and also a picture of one of my houses that I have just finished. I can give the AMERICAN BUILDER all the credit, for if you will look back in the August, 1913, number, you will find a house that looks pretty much like this one.

As lumber is so high, I took the cheapest way to construct this house. Taking the picture that was in that number, I



Field Stone Dwelling Planned and Built from Illustration in American Builder.

made myself a set of plans of eight rooms, two baths, halls, and basement. I went out and got something like one hundred loads of field rocks and went to work. Looking thru the BUILDER for material to use in this building, I bought my art-craft roofing; my window balances and window locks, my screens, and lots of other things that this good book shows from time to time. This house is the talk of the town. I rented it the other day to a party for four years at a good price, and the best of all, he wants to pay in advance.

With best wishes for the AMERICAN BUILDER, I am
 H. R. SHORT, Contractor and Builder.



Sincere Thanks from Sing Sing

To the Editor: 354 Hunter Street, Ossining, N. Y.

Your recent letter referring to the Stewart Lumber Company received and contents noted in regards to remittance, and with your kind permission I wish to take this course and announce thru your most valuable journal my gratitude, thankfulness, and sincere appreciation to the many kind and generous subscribers for the liberal response and consideration accorded me in a recent request for back numbers of the AMERICAN BUILDER inserted in the October number. My

(Continued to page 68)

What Drafting Means to the World and You



Drafting is the Backbone of All Industry

—of all construction. The world—its homes, skyscrapers, factories, ships, railroads, and commercial and industrial machinery are all monuments to the draftsman's skill. As a profession—as an avenue for advancement in every known form of engineering—drafting has no equal. Aim as high as you like and you can reach your mark in this greatest of all professions. Just as the reconstruction of Europe will first have to be planned on the drafting table, so has the world been built—so will the world continue to be built. That is why **there is no limit to your success** as a draftsman.

Make Drafting Your Profession

present work. Just give us a part of your **spare time** and we'll do the rest. Our lessons are simplified, well illustrated, easily understood—and we coach you carefully from first lesson to the last. **You simply can't fail if you want to win.**

Draftsmen in Big Demand Think for a minute of the colossal reconstruction plans of the United States—to say nothing of Europe—and you will get an idea of the busy years ahead for draftsmen in all branches. But there is **ALWAYS** a big demand for draftsmen—**BECAUSE** they are the fundamental factors in world's progress.

Don't hesitate. Don't think you can't master our lessons by Home Study until you **TRY**. So sure are we that you can do as well as any of our thousands of students, we **Guarantee Satisfaction** or refund your money in full. That's how confident we are in our methods. Have you as much confidence in yourself? If so, check and mail the Coupon for **FREE** Bulletin.

Satisfaction Guaranteed

American School of Correspondence
Dept. D-7861, CHICAGO, U. S. A.

TRAINING—THE KEY TO SUCCESS



Draftsman and Designer
Automobile Engineer
Automobile Repairman
Airplane Mechanic
High School Graduate

General Education Course
Com. School Branches
Electrical Engineer
Electrical Light and Power Superintendent
Hydroelectric Engineer
Telephone Engineer
Telegraph Engineer
Wireless Operator
Architect
Building Contractor

Civil Engineer
Structural Engineer
Mechanical Engineer
Shop Superintendent
Steam Engineer
Surveyor
Business Manager
Cert. Public Accountant
Accountant and Auditor
Bookkeeper
Stenographer

Fire Insurance Expert
Sanitary Engineer
Heating and Ventilating Engineer
Master Plumber



Name _____

Address _____

(Continued from page 66)

expectations were more than realized in this regard, and I assure you that I am extremely pleased and happy. I consider the favors received a most delightful Christmas gift, and also assure you that I shall pass many pleasant hours with you in going thru the very interesting features of knowledge and education in our special line of work.

As you can well imagine, I intend to receive much benefit and instruction from future numbers and will spend my time to good advantage in so doing. I have plenty of ambition, and the opportunity is not lacking, to improve myself. I have tried insofar as possible to acknowledge personally all the kind offers of assistance in this particular respect I have, and if I have omitted any, I beg leave to adopt this method of assuring all those kind, benevolent and interested friends who have so generously responded for one striving against adverse circumstances.

I have no earthly wealth or worldly station.
I wish I had, there's so much I could do;
For doing good brings joy without elation,
And makes our lives well worth the living too,
Still I can wish for you this Yuletide season,
The best that God can give you here below.
You understand I have no other reason,
Than that which prompts my heart to tell you so.
May every hour of life so quickly fleeting,
Bring perfect joys that never fade away.
My prayers I offer, too, in Christmas greeting;
May God bless you all and those you love today.

I trust, and hope you will all enjoy a very Prosperous and Happy New Year, and assuring you of my very best wishes for future good health and success, I am

Respectfully and truly yours,

ANDY KRAMER.



"Great Assistance with Modern Ideas"

To the Editor:

Mayville, N. Dak.

I enclose a small photo of my own residence, a semi-bungalow of my own design. It is 30x32 feet. The front porch is 8x30 and rear porch and sleeping 8x10. It is all modern with electric light, hot water heat and plumbing. I am a pioneer subscriber of the AMERICAN BUILDER. I find your magazine to be of great assistance with modern ideas.

MARTIN MIKKELSEN, Contractor and Builder.



Wants Some Estimating Tips

To the Editor:

Portland, Oregon.

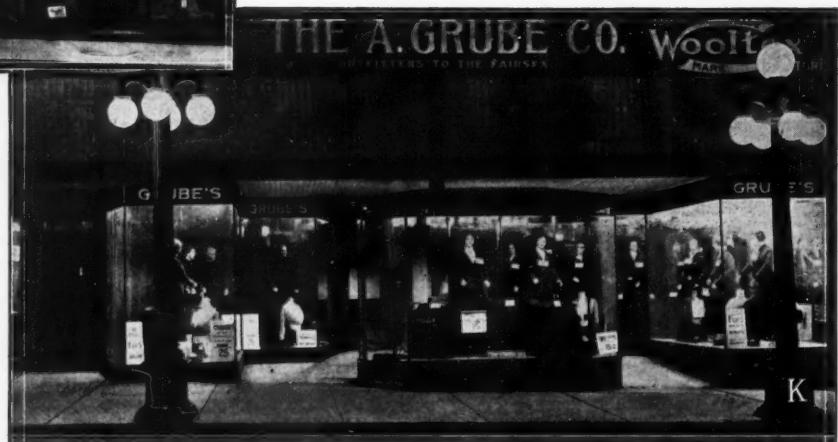
I am in the West, helping Uncle Sam to build ships, but expect to be contracting again in the near future.

I assure you the AMERICAN BUILDER finds a warm welcome and is read from cover to cover. It suits me fine. If you

(Continued to page 70)



This Kawneer Store Front Brought 25% Increase in Sales



By installing a modern Kawneer All-Metal Store Front this merchant was able to boost his sales without increasing his advertising.

60,000 other merchants vouch for the value of the Kawneer way of modernizing store buildings.

Kawneer

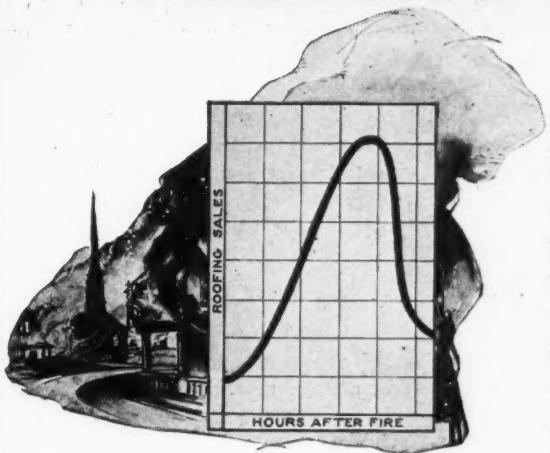
STORE FRONTS

Write today for Catalog and Portfolio of Designs.

Let us show you how you can make money as the store front expert in your locality.

Kawneer Mfg. Company, Niles, Mich.

What a town fire does to Asbestos Roofing Sales



A LOCAL FIRE is the best Asbestos Roofing Salesman in the world. When a fair-sized blaze burns a black hole in among a few houses or the factory district, then presto! up goes Asbestos Roofing Sales—and not only topping the burned buildings, but in the "scare circle" that surrounds the gutted area like the ring around the moon.

What a lesson there is in this for the roofer. What a true proof of the fact that people once awakened to fire danger—buy protection.

You don't need a fire to do your selling—do you? You can talk fire risk just as effectively in your prospect's office or living room as a newspaper headline can.

You can do it more effectively, because they respect your expert judgment as a roofer. Go out and tell them how to protect their property—that is now almost irreplaceable—get the insurance agent on your side, and the fire department. Write your own squib for the local paper.

Be The Roofer in your town, and not only that, but the best salesman with the best line to sell.

You can't beat the combination and there were never more chances than right now to use it.

Let us send you all the details about Johns-Manville Roofing and the Company behind it.

Tell us where it will reach — *now!*

H. W. JOHNS-MANVILLE CO.
NEW YORK CITY

10 Factories — Branches in 63 Large Cities



JOHNS-MANVILLE ASBESTOS ROOFING



Big Economy in Metal Lath Construction

The man who builds will appreciate the reasonable cost at which you can construct modern, strong, fire-proof homes by utilizing our metal lath products. You can save the owner time, material and labor expense.

Use Hy-Rib and Rib Lath—and you save forms, stiffening channels and labor. The metal lath is so stiff and rigid that supports may be placed a greater distance apart—saving in the cost of supports and the labor and time necessary to attach the lath. Moreover, streaked and cracked plaster is prevented.

Hy-Rib furnished in four depths of ribs and various gauges.



Hy-Rib

A steel sheathing, stiffened by rigid deep ribs. Manufactured from a single sheet of steel. Its use is decidedly simple. The easily handled sheets are fastened to the supports and the plaster or concrete applied. No forms, stiffening channels nor wiring required.

Rib Lath

A superior metal lath with beaded ribs that span between the studs, making it exceptionally stiff and rigid and permitting the wider spacing of studs. Provides a perfect clinch for plaster and prevents cracking or streaking. Saves time, labor and material in erection.

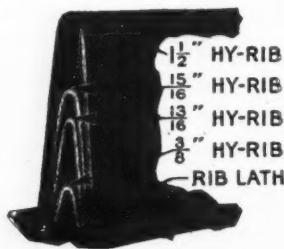
Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc.

Write today for free copy of Hy-Rib Handbook, with specifications, tables, illustrations, etc. Very valuable to builders. Address Dept. H-44.

Truscon Steel Company
(Trussed Concrete Steel Co.)
YOUNGSTOWN, OHIO



Representatives in
Principal Cities



Correspondence Department

(Continued from page 68)

have a little space to spare, I would like to ask thru your Correspondence Department, how some of our brother contractors figure the labor on a building; also amount of plaster and sand to 100 yards and amount of concrete and gravel to cubic foot of wall.

V. E. CLOW, Contractor and Builder.



Who Knows This Formula?

To the Editor:

Bunceton, Mo.

Our government uses a special glue compounded from casein and other ingredients used for gluing propeller blades and other outside work requiring extreme strength and resistance to the weather.

This formula would be of use to the trade; I would like to have it published in the correspondence department of the AMERICAN BUILDER.

C. H. TOELLNER, JR.,
Carpenter and Builder.



Finds Recreation in Cabinet Work

To the Editor:

Kentville, N. S., Canada.

Years ago you devoted a page a month to cabinet work. Without doubt you have a large number of new subscribers now who would appreciate a republishing of those, or of new articles. I, for one, would.

I am not a "builder" in the sense that your paper is issued, but a builder of health and chose the AMERICAN BUILDER in preference to other magazines on the building craft, this being my hobby.

DR. H. L. MITCHENER.



Small "Kinky" Problems Solved

To the Editor:

St. Cloud, Minn.

I write to you tonight, wishing to tell you the great help your paper has been to me, since I received your first issue.

I am taking up architectural drawing and contracting, and it works out a good many problems that are mighty useful to all men in the building trade, especially those small kinky ones that the big cyclopedias leave out.

RAY DAWSON.



Wants More on Stone and Brick

To the Editor:

Birney, Mont.

Please find my check for \$2.00, for which renew my subscription for another year.

Am a stone mason by trade. Never see anything in your magazine in my line of work. Would like to see some fireplaces and rock and stone columns, rock or stone houses—then it would be of some interest to me.

O. A. HIRTMAN.



A Chance for the Steel Square Sharks

To the Editor:

Sherwood, N. D.

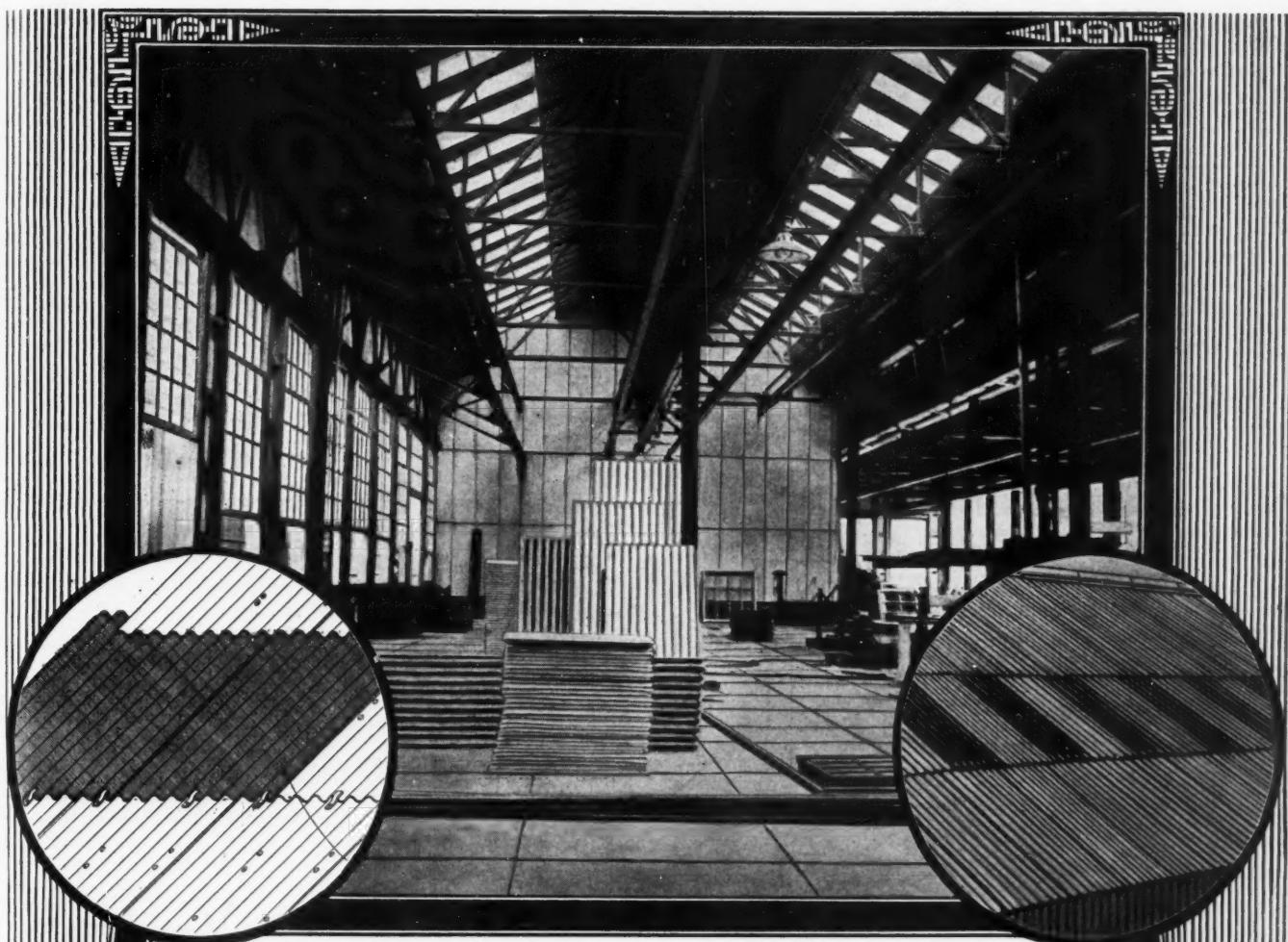
Will you please tell me how to lay out the rafters on a self-supporting roof the same as on page 71, February number?

Please state how to use the square.

GILBERT C. OLSON.

Answer—Here is a live wire roof framing question. Who among our steel square experts wants to handle it? "The Steel Square and the Gambrel Self-Supporting Barn Roof." There's your title. Go to it.

EDITOR.



Method of laying Ambler
Corrugated Wired Glass
with Ambler Asbestos
Corrugated Roofing

Interior and exterior of
shop of Wm. Cramp,
Ship and Engine
Building Co.

Tested Many Times

of late have been buildings covered with

Ambler Asbestos Corrugated Roofing and Siding

Buildings of ordinary construction being burned to the ground while adjoining "Ambler" covered buildings have been unharmed by the flames.

Besides being fireproof, the Ambler Asbestos building material is sufficiently elastic to allow of needed tension due to vibration, expansion and contraction, wind pressure, etc., without breaking in any manner. Once on, it stays "put" as long as the building stands, never needs painting or repairs, so the first cost is the only cost.

Ambler Corrugated Wire Glass for Skylights

No other feature of a skylight is as difficult to insure and maintain as that of being Leakless.

A skylight of Ambler Corrugated Wired Glass used with Ambler Asbestos Corrugated Roofing makes the Leakless feature a certainty and permanent.

The overlapping of the two as shown in the illustration and the fitting of the corrugations makes this possible.

Note the simplicity of construction—no frame work to be fitted, no joints to be puttied, no extra labor or materials.

Let us send you the full story—samples, too, if you wish. Write us today.

Keasbey & Mattison Company, Dept. B-1, Ambler, Pa., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding.
85% Magnesia Pipe and Boiler Covering, and Acid Stos Building Lumber.

Gothic Roof Hip or Valley

To the Editor: Astoria, Ore.

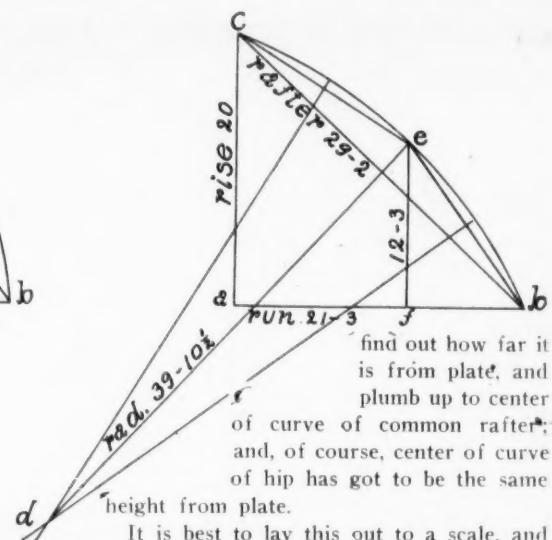
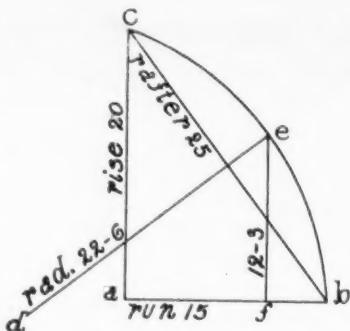
Enclosed find photo of a Gothic roof barn which I built on the Flower stock farm at Helena, Mont., two years ago.

The radius I made three-fourths the span, and the rise two-thirds the span; and I think it is about right in proportion to the building.

I will take up some space to explain Harvey T. Thompson's puzzle in the July number about Gothic hip or valley. I would lay this out on the same principle as that in the picture.

At a 30-foot span the radius would be 22 feet 6 inches, rise 20 feet and run 15 feet, for the common rafter.

In order to get the right radius for hip, we have got to



find out how far it is from plate, and plumb up to center of curve of common rafter; and, of course, center of curve of hip has got to be the same height from plate.

It is best to lay this out to a scale, and the larger the more accurate.

Figures 1 and 2 will explain—Figure 1 for common rafter. Line a-b represents the run and also the plate. Line a-c the rise, and c-b the rafter. Square thru center of line c-b, draw line d-e. Then take radius 22 feet 6 inches and strike curve from b to c; now draw plumb line e-f. This line is 12-3 from plate to center of curve.

Now for Figure 2.

Get run of hip and draw line a-b, rise a-c, rafter c-b and line d-e. Next is line e-f, which is to be 12-3 from plate to center of curve, or where it meets line d-e. Now draw lines c-e and e-b. From the center of each erect a perpendicular extended until they cross line d-e. From point where they cross each other to e is radius of hip or valley.

INGAR BRENDSEL.



Shinn-Flat

PREVENTS LIGHTNING LOSSES

If Shinn-Flat is not now represented in your community, you have an opportunity to secure the exclusive agency—an agency that is valuable and will grow in value every year.

Shinn-Flat is not like any other lightning rod manufactured, and is sold only through local representatives. When you offer Shinn-Flat to a property owner, you are offering him something that cannot be duplicated by anyone else in your vicinity.

36% More Conducting Surface

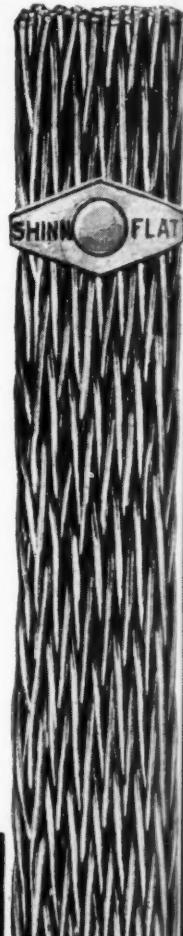
Shinn-Flat Lightning Conductors are woven flat, one inch in width, like the illustration on the right, and consequently have 36% more conducting surface than the same amount of material woven in a round cable.

The business of protecting property from Lightning fits in splendidly with the building business. You are the logical distributors—not only to apply Shinn-Flat protection to the buildings you construct, and make the extra profit, but also to put it on all other unprotected property in your community.

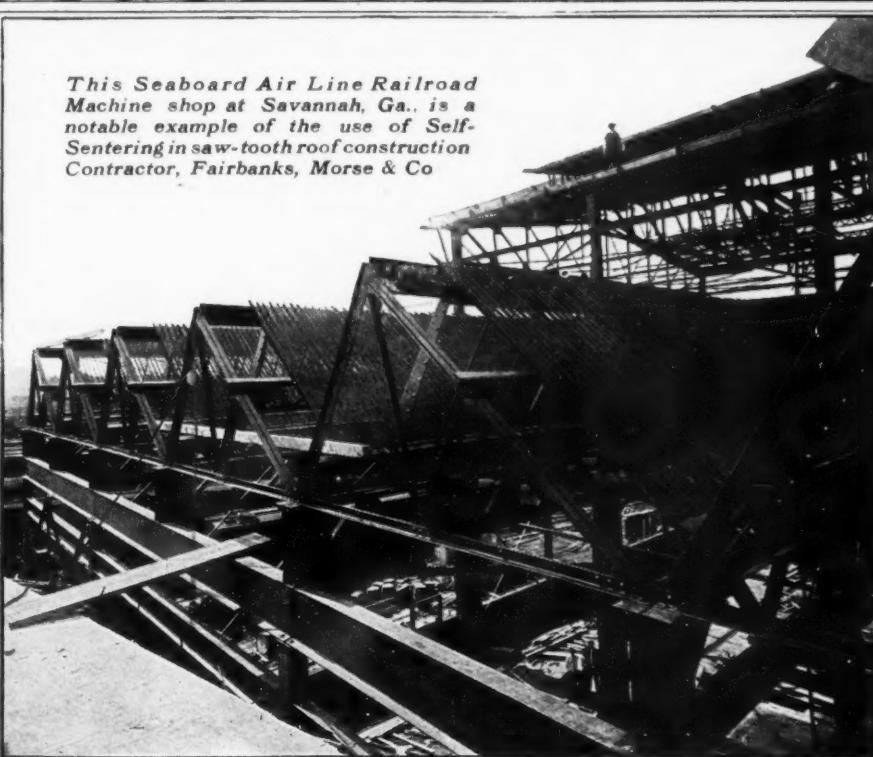
Write for Our Complete Proposition.

W. C. SHINN MFG. COMPANY, 1659 Monadnock Bldg., CHICAGO, ILL.

Lightning Can't Strike IF Shinn Gets There First



This Seaboard Air Line Railroad Machine shop at Savannah, Ga., is a notable example of the use of Self-Sentering in saw-tooth roof construction Contractor, Fairbanks, Morse & Co



Economical—Durable—and Fire-Safe

The illustration shows the use of GF Self-Sentering by the Seaboard Air Line R. R.—the saw-tooth roof of their great machine shop at Savannah. In all cases, this construction will withstand the hottest flames, and is amply staunch to bear a load in excess of standard requirements. Yet its use means less concrete, less weight, and lighter framework through the structure.

Self-Sentering is a combined centering and reinforcing for concrete roof and floor construction. It consists of a parallel series of heavy, cold-drawn ribs connected by diamond mesh—a most efficient form of expanded metal.

Self-Sentering

Reinforcement for Concrete Construction

Self-Sentering is economical because it does away with temporary wooden forms. It acts as a form for the wet concrete, and becomes a permanent part of the finished structure. This type of construction saves labor, because the large, stiff sheets are quickly and easily put in place, and the concreting is relatively simple.

In addition to all types of concrete

roof and floor construction, Self-Sentering can be adapted to many special uses requiring either straight or curved forms. There is also a heavy demand for Self-Sentering on alteration and repair work.

Every engineer and architect should write today for our complete data on Self-Sentering and other GF Building Products. The GF Fireproofing Handbook sent free to those interested.

The name of the GF dealer nearest you can be obtained by phoning Buyers Aid, Inc., in cities of 70,000 or over. Ask them to send you the GF catalog or we will send it to you direct from the factory.

THE GENERAL FIREPROOFING CO., Youngstown, Ohio

Manufacturers of All Types of Metal Lath, Concrete Reinforcements, Waterproofings and Technical Paints

Members of Associated Metal Lath Manufacturers

Branches: New York Philadelphia Chicago San Francisco
Kansas City Atlanta Cincinnati Buffalo Utica



Reg. U. S. Pat. Off.

Carpenters get what's coming to you!



You can do the wall finishing that plasterers once did and make money out of

Carey
WALL BOARD

EVERY job is a bigger job for you if you put on the wall finishing. Carey Wallboard is better for the owner, doesn't warp, never cracks, easy to decorate artistically. There are many attics you might finish in odd times if you'll just speak to the owners. Write

THE PHILIP CAREY COMPANY
1021 Wayne Ave., Lockland, Cincinnati, Ohio

Peace-Time Readjustment

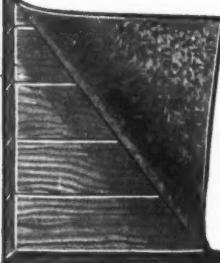
—with the vital need of making quick changes, new partitions, new buildings, etc., intensifies the demand for



It not only saves time in construction,—it makes a **better** wall lining.

It has a center core of Kiln-dried wood slats. Compo-Board walls won't warp, shrink, chip, crack or mar from ordinary knocks. They keep out heat, cold and moisture.

Look for the real wood core and the name printed every four feet. Sold in strips four feet wide by one to eighteen feet long, by dealers everywhere.



Send For Sample and Interesting Booklet

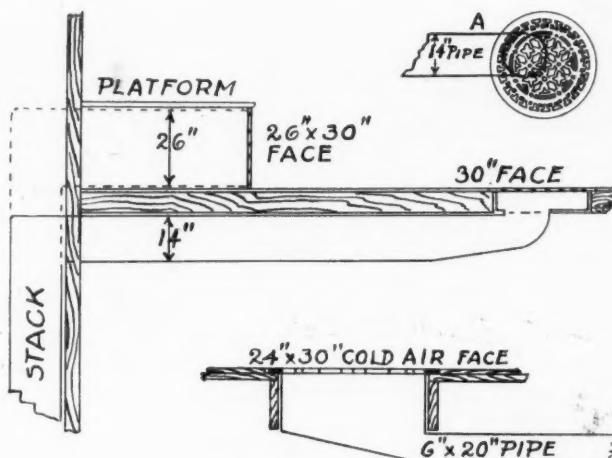
The Compo-Board Co.
5777 Lyndale Ave. N.,
MINNEAPOLIS - MINNESOTA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Camouflage in the Heating Game

Tho an armistice is in effect in Europe, the art of camouflage; that is, making things "seem like what they aint," will go on. Even heating men; no not heating men but tinners, indulge in it. We will cite two instances which "Gilt-Edge" service men have reported on which they were called on to inspect.

Case number one is a church installation. Two thirty-inch registers, apparently supplied four hundred seventy-one square inches each of warm air capacity to a second floor auditorium. That looked comfortable but as some facial beauty is only paint deep, so looking beneath the surface of the register face showed that this was camouflage. Instead of a pipe of the necessary capacity, a fourteen-inch diameter pipe tucked off on one side vainly made a bluff at filling up register box. (See A.) Any tinner who does this kind of work fits the calling of heating contractor in about the same proportion as that fourteen-inch pipe fitted the thirty-inch register box. To make a bad matter worse, the pipe was oval at the point where it connected with the elbow, still fur-



You Can't Tell by the Size of a Register Face How Much Warm Air Will Come Out.

ther reducing it to approximately one hundred twenty-five square inches and as tho this was not yet enough of a handicap, the fourteen-inch pipe ran tight up against the ceiling and parallel to it, with no pitch whatever for a distance of more than twenty feet. The best chance that congregation had to get warm was to stay home or instruct their pastor to preach nothing but sulphur and brimstone sermons on cold Sundays.

Our suggestion to remedy this job is shown in the illustration "B," extending the stack so that two short runs of twenty six-inch pipe under the platform supplied two 24x30 faces and the original thirty-inch registers, properly piped, will be used as cold air returns.

Case No. 2. This was investigated in response to a complaint from the owner of the residence. The superficial examination of the rooms seemed to disclose a properly proportioned system. The warm air registers and the cold air returns were well balanced but, again looking beneath the surface, the service man found that a 24x30 cold air face was connected to a 6x20-inch duct, as shown in the illustration. The traffic in this pipe must have been as badly congested as the New York Subway at quitting time. The remedy, of course, was simple and is apparent to you heating men without further explanation.

The late war should teach us to use camouflage only to deceive the enemy. Your customers are, or should be, your friends. Don't try it on them.—"Gilt Edge-ings."



right over old roofs

More Art Craft

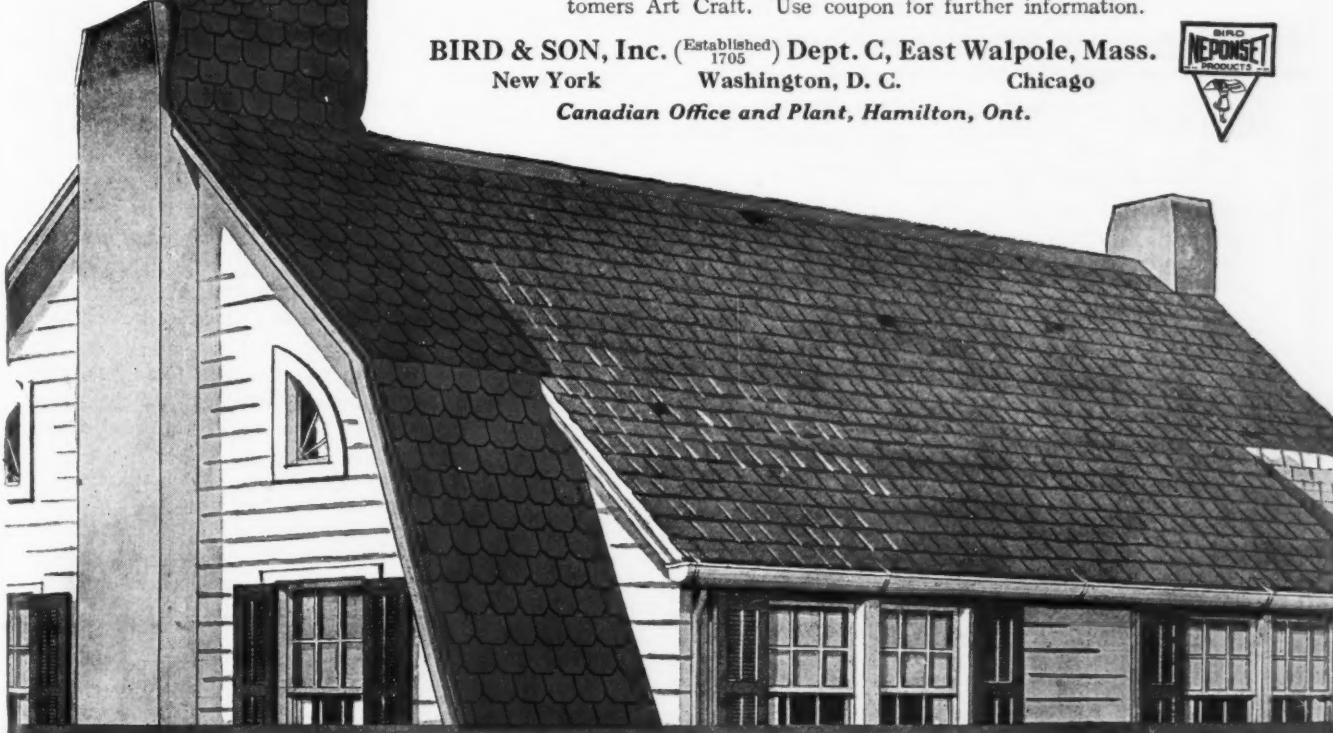
THE call from all quarters is, "more Art Craft." Carpenters and builders report doing a rushing business on Art Craft. Here's why!

Art Craft appeals to the owner's *purse*. It costs one-half as much as a new wooden shingle roof at present prices. Art Craft appeals to the owner's *eye*. It looks mighty attractive in permanent colors of red and green in tile design. Art Craft appeals to the owner's sense of *safety*. It is fire-safe.

Where does the carpenter and builder come in? In handsome dollars-and-cents profit. You can sell ten Art Craft Roofs just now to every single order for a new wooden shingle roof. You keep busy on jobs that build prestige and goodwill for you among your customers.

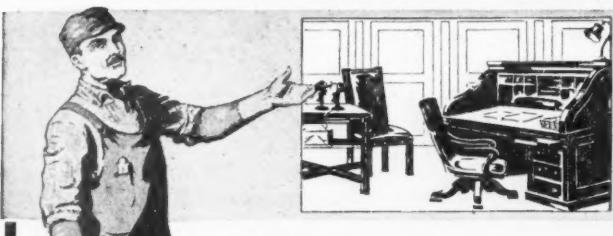
You are probably missing out on a real and timely business opportunity unless you are prepared to offer your customers Art Craft. Use coupon for further information.

BIRD & SON, Inc. (Established 1705) Dept. C, East Walpole, Mass.
 New York Washington, D. C. Chicago
 Canadian Office and Plant, Hamilton, Ont.



Art Craft Roof

BIRD & SON, Inc. (Write to nearest address given above) I want to know how Art Craft will bring me more business. Send complete information. Name..... Address.....



You're the man

who can make offices and factories more comfortable, warm for this winter.

For you are the man who can put in

PLASTERGON TREATED WOOD FIBRE WALL-BOARD

The hard, stiff, water-proof Plastergon Wall-Board, by shutting out the cold far more than sieve-like plaster, also does the patriotic work of saving coal.

Different from any other wall-board. Don't forget that! Chemically saturated.

Why don't you do now what the Government did before using Plastergon Wall-Board in *ninety per cent* of the new Washington buildings. Find out the difference.

Write for Free sample of Plastergon
Wall-Board and Builders' Book

Plastergon Wall-Board Company
201-207 Philadelphia Avenue Buffalo, N. Y.



NEWS OF THE FIELD

Ohio Convention to Feature SERVICE

The outstanding feature of the 38th annual convention of the Ohio Association of Retail Lumber Dealers, to be held Jan. 16-18 at Cincinnati, will be a Retail Lumber Merchant's Service Exhibit. The purpose of this exhibit will be to acquaint the retail lumber dealer with the vast array of service facilities, advertising helps, architectural and trade extension counsel, display material and what not which is available to him from a great number of sources free of charge.

All of this material has been provided for the dealer at great expense in an effort to make the retail lumber dealer a more efficient merchant. This material is also to be exhibited as a demonstration of the lengths to which progressive manufacturers will go in rendering service, even in instances in which there is only the vaguest chance of profit to the manufacturer.

It is the Ohio Association's hope by such a demonstration to impress the retail lumber dealers of Ohio with the importance of the *service* principle in all of their own merchandising activities.

The convention sessions will be an explanation, and the exhibit a demonstration of the principle of service in merchandising.

This is to counteract the still popular fallacy that the lumber dealer is entitled to exact a profit for sitting on a pile of lumber and whittling until his customers come and demand his goods.

The Association is asking exhibitors to correlate their displays, and plan their participation in the exhibit upon this central predominating theme of service. It will be glad to have them display their *wares*, but it is much more interested in having them display their service literature, dealers' helps and similar facilities.

As far as we have been able to ascertain there has never before been an exhibit of this character. It will be unique in contrast with the usual chaotic array of unrelated exhibit booths in the average building show.



Kinney of P. C. Assn. Promoted to Management

The Portland Cement Association announces the appointment of Wm. M. Kinney as General Manager to succeed H. E. Hilts, resigned.

Mr. Kinney has been connected with the cement industry in cement and concrete promotion work for over eleven years, having occupied for the past four years the positions of Engineer, Promotion Bureau and Inspecting Engineer of the Universal Portland Cement Company.

He is an Associate Member of the American Society of Civil Engineers and American Railway Engineering Association, a Member of the American Society for Testing Materials, American Concrete Institute, Western Society of Engineers, Engineers' Club of New York, Engineers' Club of Philadelphia, and Chicago Engineers' Club. He has been

(Continued to page 80)

Friedel's Flange Moulding



is necessary for the proper installation of any wallboard.

Wallboard when not used in connection with "Friedel's Flange Moulding" loses its economical and beautiful advantages and often proves very unsatisfactory.

"Friedel's Flange Moulding" allows proper space for contraction and expansion.

Made in different styles to suit every need. Stock lengths 10, 12, 14 and 16 feet.

Write for Book "New Working Ideas"

W. R. FRIEDEL COMPANY
Dept. 21, Memphis, Tenn.

Cornell-Wood-Board

Excels for Walls, Ceilings and Partitions
Repairs, Alterations or New Work

For war-time repair and alteration work, show your customers that Cornell-Wood-Board is unequalled. Will not warp, crack, chip or buckle and nails direct to the framework or over the old walls. Easily put up and lasts a lifetime. Resists heat, cold and moisture and is ideally adapted for the walls and ceilings of Homes, Garages, Stores, Offices, Farm Buildings, Industrial Housing, Canteens, etc. Increase business and make friends by recommending Cornell-Wood-Board.

Write for Free Samples, sent on request

Cornell Wood Products Co. 173-175 W. Jackson Blvd.
Dept. 1010 CHICAGO



JOHN W. HENRICH
Pres. Wm. Henrich's Sons Co.

Read this Letter from a Builder who Knows

November 15, 1918.

Beaver Board Companies,
Beaver Road,
Buffalo, N. Y.

Gentlemen:

Completion of a job on time, plus the satisfaction of our customers is the best way we know of to increase our business. *Beaver Board instead of plaster makes this possible.*

By using Beaver Board we have found that we can complete the work quicker, have less cartage of rubbish from job, and have a better satisfied customer.

Most every Beaver Board job requires a carpenter at least a week and we have found that people usually give us enough other work to keep a man busy for a much longer time.

Good jobs which we have done in stores, institutes, attics, etc., are a constant advertisement for us and keep the business coming our way.

Some of our best jobs are as follows:

J. N. Adam Co. . . . Show windows, Main St.
F. N. Woolworth Co. . . Main St.
Deaf Mute Institute . . . Main St.
Fairbanks Co. Offices . . . Pearl St.
Hood Tire Co. . . . Main St.
Nash Buffalo Auto Co. . . Main St.
Gould Piano Co. . . . Main St.
Buffalo Foundry & Machine Co. . . . Offices
Moore Hat Store . . . Main St.

Yours truly,

WM. HENRICH'S SONS CO.

You can't expect
Beaver Board results
unless this trademark
is on the back of the
board you buy.



Experience quickly proves Beaver Board advantages. Here is a most convincing letter from the Wm. Henrich's Sons Co. of Buffalo. It's short, it's right to the point, it tells the "Why and Wherefor" of Beaver Board in few words. Read it now!

During the reconstruction period you will have many opportunities to give your customers just the kind of service that Beaver Board is built to give. For new work or old work Beaver Board in the hands of a good carpenter makes satisfied customers and gains many new ones too.

There are big stocks of this knotless, crackless, manufactured lumber in your vicinity. Write today for helpful building literature.

THE BEAVER BOARD COMPANIES 56 Beaver Road

Buffalo, N. Y.
Branches in Boston, New York, Baltimore, Cleveland, Detroit,
Chicago, Minneapolis, Kansas City, San Francisco,
Ottawa, Can., and London, Eng.

Manufacturers also of Beaver Greenboard and Beaver Blackboard.
Distributors in principal cities. Dealers everywhere.

BEAVER BOARD

FOR BETTER WALLS & CEILINGS

(Continued from page 78)

particularly active in the work of the American Society for Testing Materials, being Vice-Chairman of Committee C-1 on Cement and a Member of the Executive Committee. He is a Member of the Executive Committee, and Secretary of the Committee on Concrete Roads and Pavements of the American Concrete Institute.

Mr. Kinney was largely instrumental in establishing the Structural Materials Research Laboratory at Lewis Institute, Chicago, under the direction of Professor D. A. Abrams, and has been since its inception, a member of the Advisory Committee.



Ideal Buys Mold Company

The Ideal Concrete Machinery Co., Cincinnati, O., acquired by purchase the patents and all castings of the Architectural Mold Company of Detroit, Mich.



Cole, Now Johns-Manville Omaha Office Manager

The H. W. Jones-Manville Co. announces, with deep sorrow, the death of Charles F. Simms, for many years manager of its Omaha office.

Mr. Simms was associated with the company for nearly thirty years and played no small part in the development of its western enterprises. A man of sterling character, loyal, faithful, and of pleasing personality, he enjoyed the love and respect of all who knew him and who now miss him keenly.

Mr. S. E. Cole, who has succeeded Mr. Simms in the management of the Omaha office, is a man of wide and varied Johns-Manville experience—eminently fitted to carry on the

good work of Mr. Simms in developing the interests and cultivating the good will of the company's clientele.

Recently he has gained particular distinction thru his work as architects' representative thruout the Middle West.



Louis H. Wiedeman Dies in Chicago

L. H. Weideman, vice-president of the Waterloo Cement Machinery Corporation, died December 15, in Chicago, of lobar pneumonia. He had come to Chicago a week before on business and was taken ill. Attending physicians were of the opinion that he had not had influenza but that a heavy cold developed into pneumonia.

Mr. Weideman had been associated with the Waterloo Cement Machinery Corporation since its organization in 1909. Starting with that institution as a bookkeeper, he had advanced to the position of general sales manager, having supervision of about 100 representatives of that firm. He was recognized as one of the leading figures in the concrete mixer industry.



Wisconsin Concern Renders Helping Hand to Stamp out "Flu"

The terrible epidemic which has gained such a stronghold in this country and proved so fatal in both camp and home laid a vital grip on the town of Cornell, a village up in Northern Wisconsin.

At once the Cornell Wood Products Company, whose mills are located there, got busy in a mighty endeavor to fight the malady and help the suffering people of Cornell. Trained nurses were called in—doctors summoned from surrounding towns, and thru the unfailing efforts of Mrs. C. O. Frisbie,

(Continued to page 82)

BLACK ROCK WALLBOARD
BLACK CENTRE

The good builder makes a real gain by insisting that his wallboard shall have this trade-mark on the back of every panel.

Then he has a wallboard that can be relied upon, the wallboard that stands up even under unusual conditions—the only wallboard with the moisture-repellent Black Centre—the wallboard whose quality helps good workmanship in every step of the job.

If you don't know the Black Rock Dealer nearest you, write us.

BLACK ROCK WALLBOARD CO.
1505 Ontario Place BLACK ROCK, N. Y.



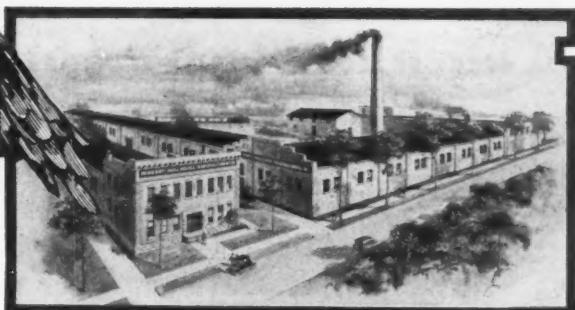
Fiberlic Wall Board
Fiberlic Wood Grain Panels

The material from which it is made, the fact that the pulp is chemically cleansed and that the *fibre lengths* give the finished product that *natural reinforcement* that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic from strong, permanent, economical and sanitary construction.

McAndrews & Forbes Company
200 Fifth Avenue, New York City
Factory: Camden, N. J.



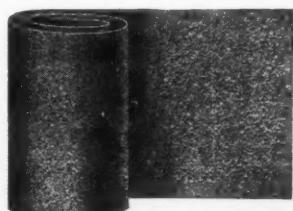
Plant at South Bend, Indiana



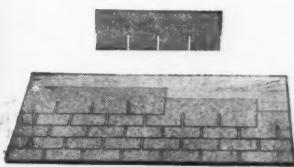
Plant at Fulton, New York

McHENRY-MILLHOUSE ASPHALT ROOFS

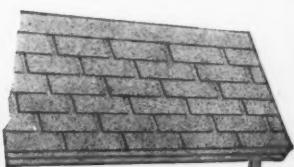
THE most exacting industrial and residential requirements always accept McHenry-Millhouse Asphalt Roof Products as standard specifications. Easily adapted to all styles of architecture. Additional attraction to any building, old or new.



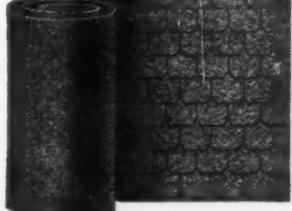
McHenry-Millhouse
Slate Coated Asphalt Roofing
Roll
(Red or Green)



McHenry-Millhouse
4-in-1 Slated Asphalt Shingles
(Red or Green)



McHenry-Millhouse
Individual Type Standard
Slated Asphalt Shingles
(Red or Green)



McHenry-Millhouse
20th Century Shingle-Effect
Slated Asphalt Roofing—Roll
(Red or Green)

Fire Brand Proof
Reduced Insurance
Low First Cost

Lasts for Years
Permanent Colors
Low Labor Cost

No Warping
No Curling
No After Cost

The superior durability of McHenry-Millhouse Roofing is due to the careful selection and the exceptional toughness of the basic stock. Every fiber is thoroughly saturated with asphalt by a special process in such a way as to render it impervious to water, vapors and gases. Does not lose its elasticity in the coldest weather. Does not evaporate or run under the hottest sun. Best of all it is fire brand proof.

McHENRY-MILLHOUSE MFG. CO., INC.

GENERAL OFFICES SOUTH BEND, INDIANA

REGIONAL WAREHOUSES

PORLTAND, ME.

FULTON, N. Y.

PITTSBURGH, PA.

LOUISVILLE, KY.

PEORIA, ILL.

SOUTH BEND IND.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



birch interior trim

LET'S GET BUSY

We no longer have to live in the future. The *present* is the time—the time for action.

Building is starting up rapidly all over the country and the smart ones will get the first plums.

Knowledge counts—brighten up your knowledge of that beautiful and favorite hardwood, **birch**, by sending for our set of six *free* finished samples and the handsome **birch** book. We'll send them to your customers too if you'll mention their names. Let's all pull together. Write now.

**Northern Hemlock & Hardwood
Manufacturers' Association**
201 F. R. A. Building Oshkosh, Wisconsin



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

News of the Field

(Continued from page 80)

wife of the president of the Cornell Wood Products Company, a system of nursing was installed and the afflicted families cared for in an efficient and systematic way. Never before had the residents of that city realized what a wonderful missionary a noble woman can be when she puts heart and soul and effort into a work of mercy.

The Cornell Wood Products Company fed and cared for the sick; nor did their good work end with those stricken by the epidemic, but they secured fuel and food for the other members of the family as well. And thru the kind assistance and the untiring energy of the nurses and helping hands the epidemic was quieted with an unusually small per cent of lives lost.



Metal Lath Office Moves to Washington

The Associated Metal Lath Manufacturers—Zenas W. Carter, Commissioner—announce the removal of their general offices from 901 Swetland Building, Cleveland, Ohio, to Rooms 813-815 Woodward Building, Washington, D. C.



Selling Saws From the Trenches

The French officer at the right of the picture, who is wearing the "Croix de Guerre," is Chr. Royer, a man closely connected with the Atkins selling organization, a non-commissioned officer and interpreter who was with the American Expeditionary Forces. He has seen a lot of fighting since early in the fall of 1914, and is a partner of the Franco - American Company, Buenos Ayres.

The gentleman next to Chr. Royer is H. Brun, who was sergeant-major in an infantry regiment which took active part in the defense of Verdun and later in the thickest of the fighting on the other fronts. He is chief clerk of the F. A. H. Company, Atkins distributors.

The man with the heavy beard is A. Dutrut, one of the three partners of the F. A. H. Company, who was in the artillery for nineteen months of the war. Mr. Dutrut has many friends in the United States, where he lived for one year. At the present time he is entirely imbued with the idea of introducing American hardware in France.

Lieut. C. Bret is the officer on the extreme left. He belonged to the famous 20th Corps, which took part in nearly all of the great French offensives since the beginning of the war. Some time ago he was decorated with the "Croix de Guerre" for great courage and devotion. Before the war Mr. Bret was one of the F. A. H. Company's salesmen.

A great many of our readers are familiar with the smiling countenance of Mr. Cahne, the gentleman in civilian attire who is seated. Mr. Cahne is manager of the Atkins Branch

(Continued to page 84)



Fighting Saw Salesmen.

To Speed Up Your Work Urge Homebuilders to Buy

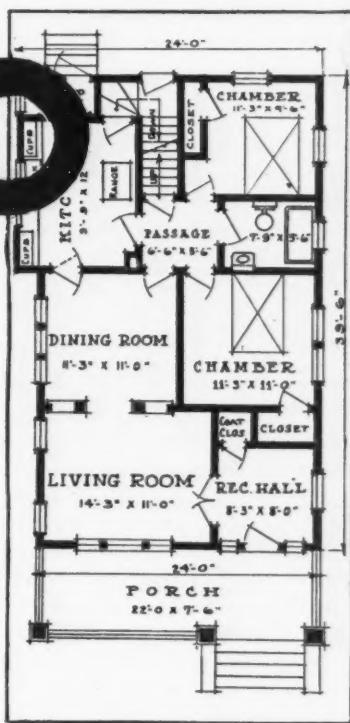
CURTIS Woodwork

Worth-while profits and speed in construction—the complete satisfaction of customers that brings you an ever-growing business—these are the things you want in and from your work.

You can make a more profitable use of CURTIS Woodwork this Spring than ever before.

Look at this kitchen cabinet! It's the work of days for a man to build this up, piece by piece, on the job. Then it still has to be sanded.

As a piece of Curtis Built-in Furniture it's only a matter of hours to set the already assembled and well sanded sections into place. So it is with all our woodwork.



1866 CURTIS WOODWORK

"The Permanent Furniture for Your Home"



Steady advertising, despite the war, kept our product and our trademark—CURTIS—fresh in the minds of the people. A never-faltering devotion to an ideal keeps CURTIS Woodwork, every piece of it, worthy that mark.

If you are not familiar with our product, write today to our Service Bureau—and call on a Curtis Dealer. You should learn about this trademarked woodwork now—then, when the big call for building comes, you will be prepared to get the most out of the time-and-labor saving qualities of CURTIS Woodwork. Let us begin now to work together to handle this future business.

THE CURTIS COMPANIES, SERVICE BUREAU 2064-3064 S. Second Street, Clinton, Iowa

Manufacturing and Distributing Plants at

Clinton, Iowa	Lincoln, Neb.	Minneapolis
Wausau, Wis.	Chicago	Oklahoma City
Sioux City, Iowa	Detroit	Topeka
Topeka, Kansas		Dayton, Ohio

Eastern Offices at Pittsburgh and Washington

The makers of CURTIS Woodwork guarantee complete satisfaction to its users.

"We're not satisfied unless you are."

News of the Field

(Continued from page 84)

at 10 Rue Gustave Flaubert, Paris, France.

Last, but not least, we want to point out Mr. E. Desrues, who is also affiliated with the F. A. H. Company. At first he was in the infantry, but just before hostilities ceased he was special mechanic in the French Aviation Corps. It can be said of Mr. Desrues that he was one in a very limited number of business men who kept in close touch with his business almost daily by correspondence from one of the trenches on the Somme when in the infantry, as well as later on when attached to the aviation section.

Now that the great war is over those of the above who have seen fighting will be just as much interested in the business of selling American-made saws in France.



Toncan Metal Liberty Bell

In the Fourth Liberty Loan, Utica, N. Y., probably had the most unique Liberty Bell ever constructed. This bell is made of No. 24 gauge Toncan Metal. It is 6 feet 2 inches in diameter and 6 feet in height over all. The total weight is 222 pounds. The bell was made in sections and bumped into shape, the top being raised out of one piece.

It was placed on a platform in front of the Utica Savings Bank, and underneath was located a phonograph which played patriotic music. The bell was sprung as a surprise on the day of the Liberty Loan drive and was soon the talk of the town. On account of the general interest manifested the bell is still kept on exhibit in front of the bank, and probably will remain there for some time to come. It was made of rust-resisting material purposely to resist the elements.

The Stark Rolling Mill Company, Canton, Ohio, manufac-

turers of Toncan Metal sheets, advise that they have never known of their product being put to such use before.

The originator of the idea and the designer of the bell is Mr. Theodore F. Steinhorst, sheet metal contractor. Mr. Steinhorst is the eldest son of seven sons in business with their father. Four of the boys are in the army along with seven others from the same shop. With such a representation in the service it is very fitting that the city Liberty Bell should be designed and built in the Steinhorst establishment.



Liberty Bell Made of No. 24 Gauge Sheet Metal.

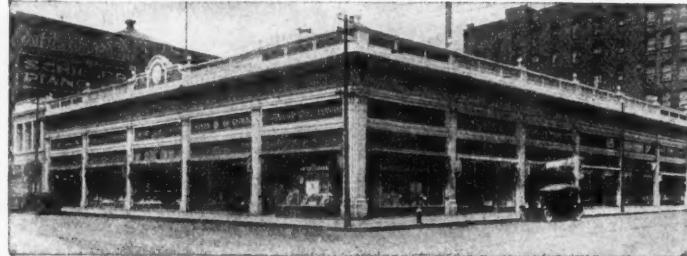
To Regulate Use of Trucks on Highways

A committee of the Highway Transport Commission of the Council of National Defense is at the present time discussing the question of a uniform traffic law for federal adoption or for recommendation to the various states. At present the traffic laws are so different in many neighboring states as to

(Continued to page 86)

Brasco

Copper Store Fronts Within Your Reach



Every merchant with a keen vision sees the value of a modern store front but the one thing contributing more than any other to his indecision is his erroneous ideas of cost.

Don't let him jump at conclusions, investigate *Brasco*.

We say, emphatically, that the *relation of cost to earning-power* in *Brasco*, is one of its greatest assets.

Not in the life of any people has the business outlook been more promising or the need for a *live, trade-compelling store front* greater.

Help him make his decision now and be prepared.

Full information without obligation.

Brasco Manufacturing Co., 5029 So. Wabash Ave., Chicago, Ill.

USE

MIDLAND TERRA COTTA

FOR BEAUTY AND DURABILITY

In the selection of MIDLAND terra cotta you are assured the exclusiveness of design and quality that only most highly skilled workmen can produce.

QUALITY AND SERVICE
Our Motto



Kenwood Apartments

Roy France, Architect

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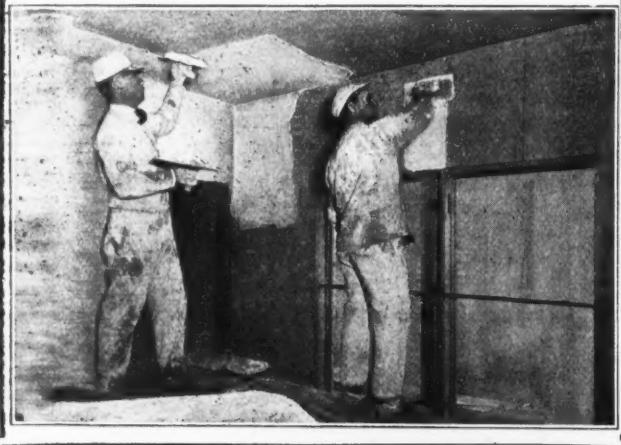
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News of the Field

(Continued from page 84)

cause confusion and annoyance. One of the puzzling questions before the committee is that of the weight of motor trucks, or of trucks and trailer trains, and the committee is very anxious to get all the reliable data possible covering the subject.

C. H. Martin, President of the Martin Rocking Fifth Wheel Company, of Springfield, Mass., was asked to go before the committee and give the result of his experience with trucks and trailers. Mr. Martin is one of the pioneers in the truck and trailer field and has made a special study of this question. In speaking of the subject, he said:

"During the general discussion it seemed to me there was an inclination to recommend maximum unit loads of 25,000 to 28,000 lbs. Now, if such a law were passed, it would be very easy to interpret a truck and semi-trailer or a truck and train of trailers as a unit.

"It seems to me that the future big use for motor trucks will be in inter-city transportation, and the bigger the load that the motor will draw, the more competition it will be to the railroads for short hauls—say up to 300 or even 400 miles. In order to compete with the railroads big loads must be handled and there is only one way to handle them and that is with trailers. Therefore, there is a possibility of getting laws made that will restrict development.

"I advocate the elimination of the maximum unit idea altogether and recommend instead a maximum weight per tire inch and that there be a distinction made between driving wheels and wheels that do not have power applied to them—but if a limit of weight must be made that it be—say 15,000 to 18,000 lbs. per axle, and that the axles be not closer together than 100 inches. I recommend that the maximum weight per tire inch on driving wheels be 800 lbs. and that the maximum weight on trailer wheels be 1,200 lbs.

"Our experience has shown that a tire which is not subjected to tractive strain need not be more than half the width for a given weight of one which is subjected to tractive strain. Therefore, should a recommendation be made for a certain weight—say 800 lbs. per tire inch—it would not be fair to the trailer user because he would have to have bigger tires on his trailer than necessary, which, of course, means unnecessary expense.

"Of course, the Highway Commission has in view primarily the safety of the highways. I take the stand that there is no other way to tell the relative damage done to the highway by the weight and tractive strain than to assume that the highway suffers in proportion as the tire suffers. In other words, if a dual 6-inch tire on a driving wheel and a single 6-inch tire on a trailer wheel, each wheel carrying the same load, wear out at the same time, it is safe to assume that one has done about the same damage to the highway as the other."



Suggests Frame House Campaign for Devasted Europe

Now is the time to promote sentiment for the frame house in France and Belgium, according to R. S. Whiting, architectural engineer of the National Lumber Manufacturers' Association. He points out that the people of those countries for hundreds of years have lived in houses built of stone, and know nothing of the utility and beauty of the frame home as it is known in America.

Mr. Whiting declares he is doubtful as to whether the French and Belgians will go back to the stone houses, and he sees a chance for American lumbermen to inaugurate

(Continued to page 88)

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Everywhere captains of business are recognizing the necessity and value of providing permanent, comfortable homes for the contentment and welfare of their employees.

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News of the Field

(Continued from page 86)

such a wood-building propaganda that the people over there will learn to want the frame house.

Mr. Whiting suggests that architects in the United States who are favorable of wood construction should be immediately put to work on the task of studying French and Belgian conditions, in order to devise the best frame home for them along lines that meet their own of what a home should be.



The Fifth Liberty Loan

Charles H. Schweppe, Federal Reserve Director of the Seventh District Liberty Loan Organization, Chicago, has issued the following statement regarding the Fifth Liberty Loan, which will be floated in the spring. Mr. Schweppe, judging the matter in the light of very wide experience in the investment affairs, and as a Liberty Loan executive in previous successful campaigns, believes that the Fifth Loan will be floated without difficulty if the public can be made to understand that the government must have large amounts of money to pay the Victory bills, bring the conquering American troops and clean up the tremendous job of saving Freedom for the world. The official statement follows:

"The next loan, which I think will be the last, should be called the 'Fifth Liberty Loan,' as the advertising value of the term 'Liberty Loan' is great and should not be discarded. I feel an intensive campaign in the spring will bring better results in the Seventh Federal Reserve District than selling bonds over the counter.

"I doubt if the Fifth Liberty Loan will be as hard to place as some anticipate. The money will be used to finance the task of bringing our men home from France and to pay war bills, and I cannot believe that there is a single repre-

sentative of the Liberty Loan organization in the Seventh District who will not be ready to do his or her full share.

"As to the kind of bond that may be issued, I feel a short-term bond—say, five years—at a high rate of interest, exempt only from the normal income tax, would be more attractive than one with a lower rate of interest exempt from all Federal taxes. Such a bond would have more appeal and should be more popular.

"I do not advocate having the banks throughout the country underwrite the next Liberty Loan because I am confident that the method used in the previous campaigns can again be used, provided the Treasury Department puts out a bond with attractive investment features.

"People should fully realize that the United States is still maintaining a large army of occupation in Europe, and during the period of reconstruction will have many large expenditures to make. We should all continue to save what we can in anticipation of the next loan and be prepared to over-subscribe our quota."



Getting the Fighters Back to Work

Employers of labor are to have a most important part in the rehabilitation of two hundred thousand American men disabled in the war. According to a monograph, "What the employers of America can do for the Disabled Soldier and Sailor," recently issued by the Federal Board for Vocational Education, the success of the Government's big program of dealing with the men who have borne the brunt of battle, to a great extent, depends upon the attitude and co-operation of the employer.

It is the intention of the Government to assist in placing each man, regardless of his handicap, in suitable civil employment. The men are not to be dealt with from the viewpoint

(Continued to page 90)

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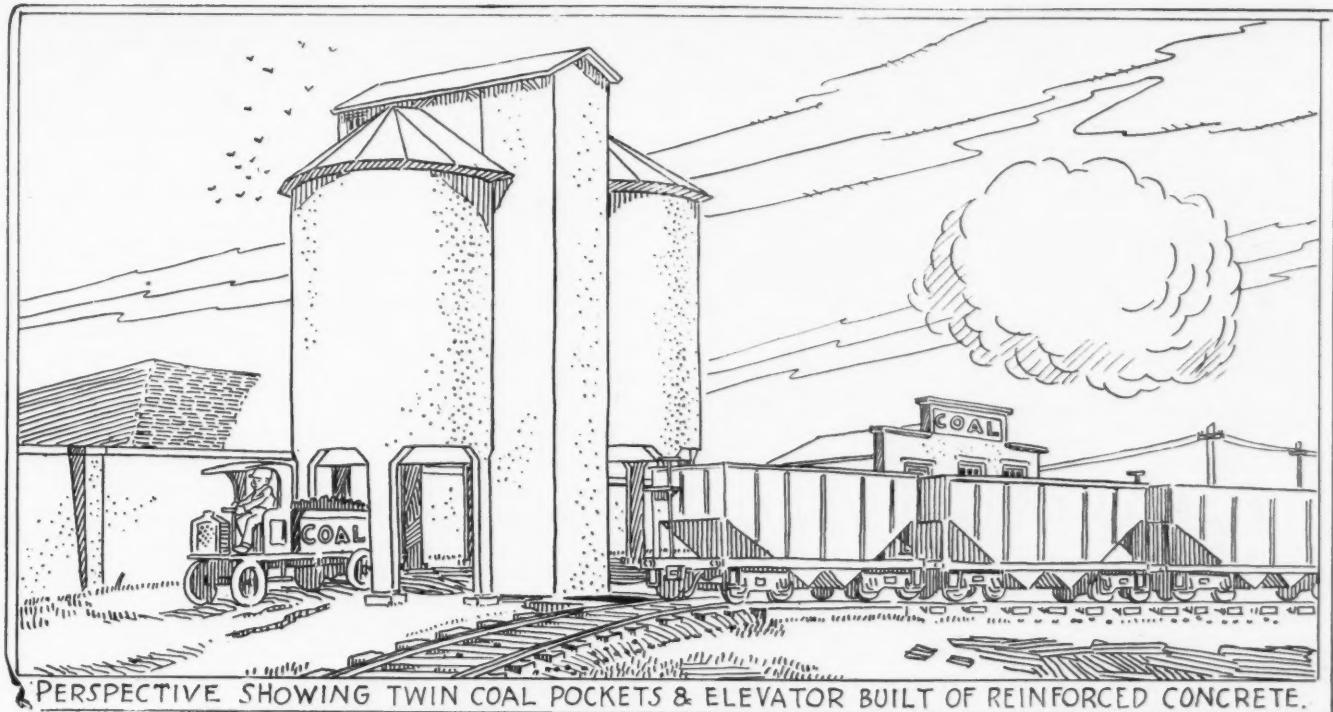
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Present _____

Occupation _____

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and No. _____

City _____

State _____

News of the Field

(Continued from page 88)

of giving them special "soft" jobs. Sympathy and charity are neither needed nor desired. On the other hand, the employers of America are requested to consider the employment as a business proposition. More harm than good will be done to the disabled man if he is merely "taken care of" in a job in which he cannot make good and earn advancement.

The Government has provided that its disabled man may be retained in order that he may overcome his handicaps and be re-established as an efficient worker. Thru the co-operation of the employers definite jobs will be made available. The training of each individual will be made thoroly practical and pointed toward a specific occupation to which he may go when he is industrially fit.

The utmost care is to be taken that each man is trained for and placed in a job in which he can make good. Each case will be considered individually on its merits by experts of the Federal Board and by a physician, an employer and a representative of labor in the home district of the man who is to be trained. An effort will be made to place each man in the occupation in which he is most interested, provided it is neither waning nor overcrowded. While it is the policy of the Federal Board to return the man to his former occupation, it can, if deemed advisable, train him for an entirely new trade. In each case the previous education and experience and the nature of the man's handicaps will be given full consideration in determining a suitable occupation.

Courses of instruction in all agricultural, industrial, commercial and professional occupations are being provided under the jurisdiction of the Federal Board.

No attempt is being made by the government to establish special schools for the training of disabled men. The most reputable trade and vocational schools, colleges and other well-organized institutions will be utilized. In many cases the training will be given in the factory, shop or office in which the disabled man will be employed after he has finished his course of instruction, and is competent to do the work.

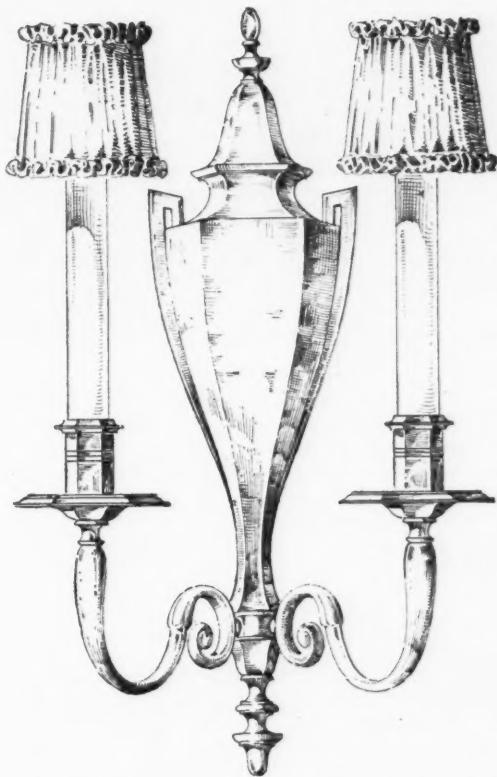
All expenses, of course, of training, the personal living expenses of the disabled man, and in the case of one who could not successfully follow an occupation without retraining, allowances will be paid to his dependents by the Federal Government.

After the man goes to work his interests and those of his employer will be safeguarded by a follow-up system of supervision established by the Federal Board. While each man will be free to do as he chooses, the policy of the Board will be to see that he makes good, and if he is unable to do so he may receive additional training in the chosen occupation or in some other pursuit in which he is more likely to become efficient. This additional training, when found necessary, will be given entirely at the expense of the Government and on the same basis as the previous course.

Tho he may be handicapped in body, the disabled man who carries on thru a proper course of training and is placed in a real job will have the satisfaction of feeling that he is doing a man's work. He will be independent and will be able to retain his self-respect.

The employer who thinks he is doing a patriotic duty by giving the disabled man a temporary soft job at high wages is only helping to make one of America's brave soldiers dissatisfied and dependent in future years of his life.

Co-operation of the right kind is sought. Every employer will do well to learn his part in this great work for the disabled soldier and sailor. Inquiries should be addressed to the Federal Board for Vocational Education, Washington, D. C.



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Red Cross Buildings in Europe

The construction work of the Red Cross in Europe has taken many different forms. Everything from tents to concrete houses has been put up; everything from chateaux to stables remodeled. South of Monastir, in Serbia, adobe houses have been built to house refugees. In the ruined villages of France, old bricks, timbers, tiles, have been salvaged and applied to the work of patching and repairing the shell-battered houses. Warehouses for the most part have been rented, altho a number of circus and sideshow tents were recently ordered for temporary warehouse purposes. Hospitals have been provided by remodeling chateaux and country places, whose use has been donated by the government, the owners or relief societies.

At Pisa, almost under the shadow of the leaning tower, a complete city of 91 buildings is being built by the Red Cross to shelter Venetian refugees. Eighty of these buildings will be used as dwellings, and the area of each of them—18 by 72 feet—will be divided into nine rooms, forming a series of apartments. There will be a school, a community kitchen, a store, a hospital, a laundry. The foundations are of stone concrete, which comes from a quarry near Pisa. For the rest of the structure concrete block made of lapillo, a form of light and impermeable stone erupted by Vesuvius, will be used. The roofs are of timber, covered with red tiles of local manufacture. The town will contain a public square

120 by 150 feet, a playground with a fountain and two miles of macadamized streets.

A type of building which has been used very successfully where it is desired to provide a quick solution for a hospital, housing or canteen problem, is the demountable barrack, a



To house homeless Italians, the American Red Cross is co-operating with the Italian government in erecting small villages with central storage houses which also serve as a restaurant. Many of these buildings are put up for permanent use, and naturally are built of concrete. In the above picture is shown the plan of starting one of these villages.

number of which the Red Cross keeps stored in Paris ready for an emergency. These buildings weigh about five tons and can easily be shipped in one freight car. They are 97 by 17 feet, with twelve large windows, can be erected in two

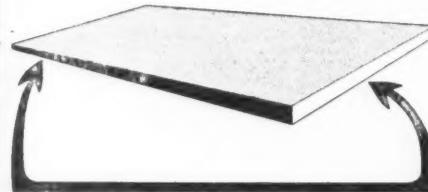
(Continued to page 94)

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It is vitally important that all the Sheet Metal used should be lasting, should resist corrosion.

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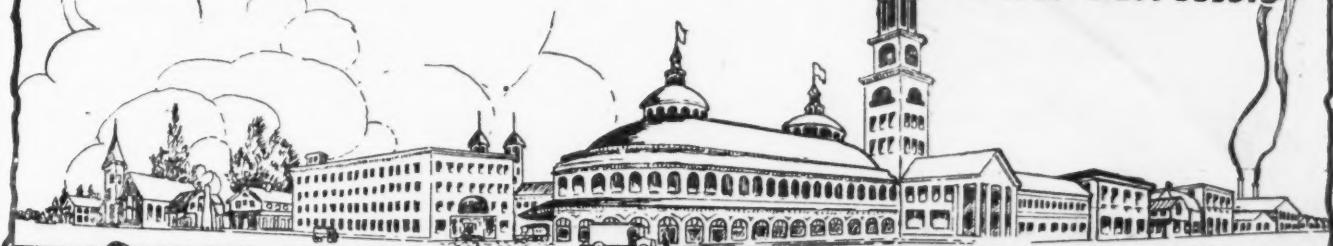
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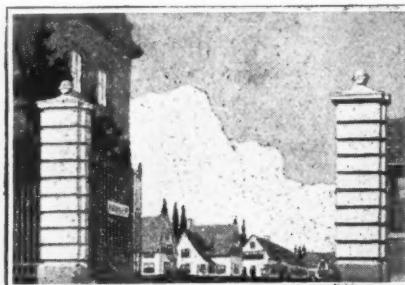
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Through this spirit Kohler products have set and attained their enviable mark.

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Red Cross Buildings in Europe

(Continued from page 92)

days and will house forty people. The roof, floor and sides are of double thickness, providing air space for warmth; the floor is of hard pine from the Alps; the roof of matched boards, the inside tongue and groove, the outside covered with tar paper. Practically no nails are used, the panels being bolted into place. Ten of these buildings have been supplied to the United States Army.

Now, with the shortage of labor and lumber abroad, many portable houses are being shipped from America. All the carpentry work on these houses is done before the house leaves the shop, so that only common labor is required to erect them; and they can be taken down, stored and rebuilt many times. The floors are built in sections 3 feet wide, 21 feet long, complete with joist and flooring nailed together in solid section. These sections are put together with a patent joint and bolted, connecting to the outside sill with the same joint and bolting to the sill. The walls are built up in sections 3 feet wide, 8 feet high, complete with siding outside, ceiling or fiber board inside. Doors and windows are built in the sections, which bolt together. The roof trusses are



While it is against their principles to fight, the Quakers are none the less brave in their work in the hospital service and in other non-combatant divisions of the army. The above picture shows how the Society of Friends did its bit in the way of reconstruction. These houses were of the demountable type. They were not only bought by Quakers but erected by them for the use of refugees.

of 2 by 6 and 1 by 8 lumber, built in solid pieces, one for every 10 feet. The roofing is made in 3-foot wide sections, length the run of the roof, using tongued or grooved clear pine or fir, fastened together with 1 by 3 nailing strips. Guaranteed roofing, with 4-inch overlap, is applied to these sections at the factory. In most cases no overhead ceiling is used, fiberboard being used for lining on the under side of the roof. This system gives more overhead space, as the extreme height is not over 14 feet.

All this construction work, for housing refugees, for hospitals, dispensaries and canteens, is only a part, and a small part, of the multifarious activities of the Red Cross abroad. But it is an integral part; and it is one manifestation of that spirit of Service which is the idea back of the Red Cross—the idea in the minds of a hundred million Americans.

For altho the Red Cross membership is only a little over one-fifth of the country's population—22,000,000 out of 100,000,000—yet the American people are solidly back of the Red Cross, and it is the aim of the organization, in its Christmas Roll Call, held during the week beginning December 16, to increase its membership to the limit of population: 100,000,000. It desires to enroll every man, woman and child in the country, so as to give notice to the world that America stands solidly and uncompromisingly for the ideals for which we are fighting—mercy, honor and good faith among the nations.

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We will furnish a blue print which will aid you in showing your prospect how simple and inexpensive screened porch construction really is. We will send it gladly upon request.

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Pearl is made in two weights
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First Concrete Vessel Is Intact

EXPERTS GO OVER THE "FAITH" AND FAIL TO FIND EFFECTS OF STRAIN DUE TO STORMS.

THE concrete ship "Faith," 5,000-ton cargo ship built in San Francisco for a private concern, was inspected by a party of Corporation officials in the Bay of New York, Tuesday, November 26, reports the "Emergency Fleet News," which is published by the United States Shipping Board Emergency Fleet Corporation. The "Faith" had just arrived in the harbor from Cuba, completing a series of voyages that had carried her 11,000 miles since she left San Francisco last spring.

In the party besides officials of the Portland Cement Association and the San Francisco Shipbuilding Company, builders of the "Faith," were Daniel H. Cox, manager of the Division of Steel Ship Construction; Prof. H. C. Sadler, naval architect and consulting engineer of the engineering Section; A. P. Mathesius, executive assistant to Vice-President Ackerson, and R. J. Wig, head of the Concrete Ship Section. The party was taken out from Battery Park to the "Faith" in a tug and spent nearly two hours going over the ship.

Because of the fact that the "Faith," on an early voyage, had gone thru a terrific storm off the coast of Oregon and another later off Hatteras and because she had carried a varied assortment of cargoes since her initial trip, the officials were much interested in finding whether she showed the effect of strain. Mr. Cox and Mr. Sadler examined the ship with great care, paying particular attention to any indication of cracks in the side of the hull. They found that the vessel was watertight, more so perhaps than the usual steel vessel. Such cracks as were found were not deep, and there was no suggestion of open fissures in the side of the ship.

Go to Bottom of Hull

The "Faith" was in ballast when the visitors went on board and they were able to go into the bottom of the hull. One of the most interesting disclosures was the fact that all of the interior of the vessel, including such uprights as the supports under deck beams, was entirely of concrete. The interior view gave a most deceptive idea to the visitors, because of the fact that the sides have much the appearance of wood construction. It was impossible to determine without touching the side of the vessel whether the material was wood or concrete. This led to many amusing discussions, which invariably were settled by someone proving that the material was concrete and not wood.

Despite her strenuous voyages, in which she encountered severe weather, the "Faith" did not take water, and her builders declare her absolutely dry.

According to the chief engineer and captain of the vessel, the "Faith" requires no more fuel than steel ships of similar size with which they have been familiar, and they were unanimous in their opinion that the concrete ship had been proved a success.

Conversation with officers and the men of the vessel brought to light that in the midst of the storm on the Pacific Coast, when the ocean was swept by an 85 to 90 mile gale—a storm which tossed most ships about on the water like a cork—the "Faith" rode on practically an even keel, and did so little rolling that it was scarcely noticeable. One of the officials had a picture of the "Faith" in the midst of the storm, which showed a wave going over the bow. It was evident when

(Continued to page 98)

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USING kerosene in a 6 H.P. "New-Way" Engine for 300 working days saves over \$200.00 yearly on each engine used—other sizes in proportion. You cannot afford to use any other fuel than kerosene for your power.

Contractors who figure on saving all possible operating cost will wisely demand that the "New-Way" Kerosene Engine operate his new outfit.

The "New-Way" Patented Vaporizer changes the kerosene oil into a perfect gas before it reaches the cylinder and permits the use of gasoline, or engine distillate without changing the engine.

The "New-Way" Kerosene Engines are of the throttling governed type, which is absolutely necessary for successful operation on kerosene.

Manufacturers and contractors will increase the efficiency and economy of their new outfits by equipping them with the "New-Way" Kerosene Engine.

**THE "NEW-WAY" MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.**

A Contractor Says:

Gentlemen: It is with great pleasure that I write you in regard to the satisfaction I have been having with the "New-Way" 6 H.P. Kerosene Engine running a 10' Eureka Batch Mixer which I have been operating for about fourteen months.

The Kerosene consumption in gallons per day of eight hours' work is practically identical with that of gasoline, using about four gallons, so that my fuel bill was cut practically in half by using the kerosene engine.

I have found it as easy to operate the "New-Way" Kerosene Engine as to operate a gasoline engine, and it has always been in continuous operation regardless of the class of help I have had to use, and in my work the help is not always the most intelligent. Very truly yours, V. D. MINNIS.



Speed Up with Novo Power!

Novo Reliable Power has enabled contractors on government work to get big construction jobs under way with a minimum of delay. It has played a big part in the building of shipyards and ships at record speed.

Novo Engines and Outfits are light, compact, quickly shipped, quickly set up and at work. They are Reliable Power—the way Novo Equipment is built prevents the delays caused by imperfect construction.

Within the range of its capacity— $1\frac{1}{2}$ to 15 H. P.—Novo Power is unexcelled for Efficiency, Economy, Reliability. Outfits for pumping, hoisting, air compressing, sawing; furnished to operate on gasoline, kerosene, distillate, natural or artificial gas.

Below are given the names of a few of the prominent contractors and shipbuilders who are using Novo Power:

Contractors Using Novo Power

Westinghouse, Church, Kerr Co.
Fred T. Ley & Co., Inc.
Foundation Company
Smith, Hauser & McIsaac
The Austin Company
Geo. A. Fuller Company
McClinic Marshall Construction
Company
Consolidated Engineering Com-
pany
Dravo Contracting Company
Sanford & Brooks Company
Central Construction Company
Burcher & Williams

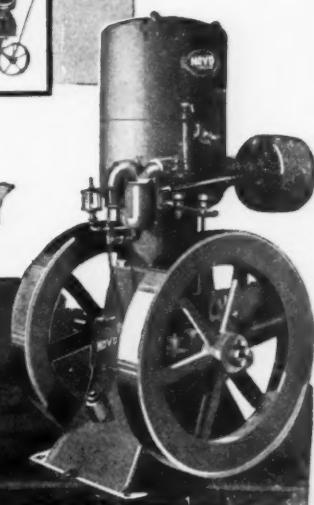
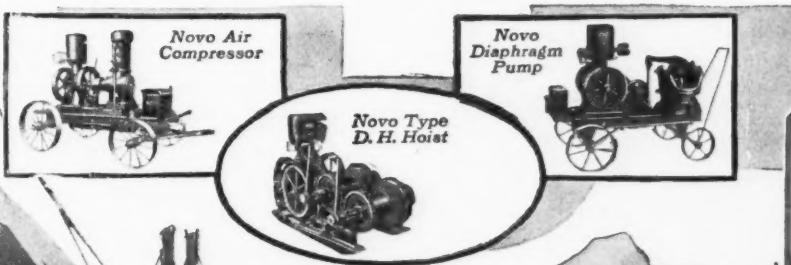
James M. Cummings
J. Henry Miller
Gaylord Engineering & Con-
struction Company
Bedford Stone & Construction
Company
Nordyke & Marmon Company
H. R. Douglas
Walbridge, Aldinger Company
A. J. Smith Construction Com-
pany
Morgan Engineering Company
Vogel & Bros. Construction Com-
pany

Shipbuilders Using Novo Power

American International Shipbuild-
ing Corporation
Newport News Shipbuilding &
Dry Dock Company
Submarine Boat Corporation
Baltimore Dry Dock & Shipbuild-
ing Company
Great Lakes Dredge & Dock Co.
Imperial Shipbuilding Company
American Shipbuilding Company
H. G. Christman Company
Chickasaw Shipbuilding Company
Lake Torpedo Boat Company
Chester Shipbuilding Company

Write us for full information

NOVO ENGINE CO. 884 Porter Street Lansing, Mich.
Clarence E. Bement, Vice-Pres. & Gen. Mgr. Chicago Office, 800 Old Colony Bldg.



Erecting Good Dairy Barns Brings Big Profits To Builders

Dairy barns so built and equipped that they make for more milk, better milk, cleaner milk—and less work for the dairyman, are in big demand. Dairymen all through the land are either erecting new and better barns or are remodeling their old ones.

James Barns and James Equipment are known to these dairymen. We advertise heavily in farm and dairy papers.

We will be glad to cooperate with you and help you land contracts for building barns in your vicinity the "James Way." We will send you the 312 page book "The James Way," illustrated below—**FREE**. It is packed with valuable dairy barn building facts and directions.

JAMES MFG. CO.
EM75 Cane St., Ft. Atkinson, Wis.
(East of Ohio Address)
EM75 Williams Street, Elmira, N. Y.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

First Concrete Vessel is Intact

(Continued from page 96)

the picture was taken that the ship was riding comparatively even. One of the crew pointed out that a drinking glass placed on a shelf in the galley had not fallen off during the storm, and also that there was not a rack for holding dishes in place on the entire vessel, yet not a dish was broken during the severe weather.

Mr. Cox was favorably impressed with the "Faith." After inspecting the vessel he said:

"There are certain architectural imperfections in the 'Faith' which are not found in our steel ships, and which will guide us in building the new concrete vessels. This ship was built without the care that we are paying to our own concrete vessels, and the faults in the construction of the 'Faith' can be very well avoided."

Mr. Cox said that the "Faith" probably was as economical in carrying bulk cargo as a steel ship of the same size. The cost of operation might be slightly more in the case of the "Faith" when running light, but the difference is not great. It is agreed among officials that the whole future of the concrete ship industry depends upon the cost of building.

The "Faith" looks little different from other ships. In fact, it was almost impossible to tell when approaching the vessel that she was not a steel steamer. Yet she has always attracted much attention from other vessels which have approached near enough to discern her name, because the "Faith" has become internationally famous as the first large concrete steamer ever built. Crew and officers took much delight in telling how strange steamers came as close as possible to get a good look at their ship, and how the crews of other vessels invariably crowded to the rail as they went past. In all harbors visited the ship also has been an attraction for natives, particularly shipping men.

The "Faith" has left New York with a general cargo, her destination being Chile. On her previous voyages she had gone to San Francisco, and thence to Peru and Chile, thru the canal to Havana, and then proceeded to New York.



Positions Sought for Army Officers Now Leaving Camps in U. S.

The United States Employment Service today issued an appeal to employers in need of technical and other highly trained men to take on qualified men from the commissioned and enlisted ranks of the army who are now leaving the camps.

Hundreds of officers, many of the higher ranks, are asking the camp representatives and federal directors of the Federal Employment Service for the states to assist them to obtaining new employment. There also are large numbers of enlisted men qualified for professional and technical positions who are leaving the army without having positions in sight.

Among the men of this high type applying at the Federal Employment Service are engineers and other technical men, executives, chemists, statisticians, purchasing agents, employment managers, cost accountants, etc.

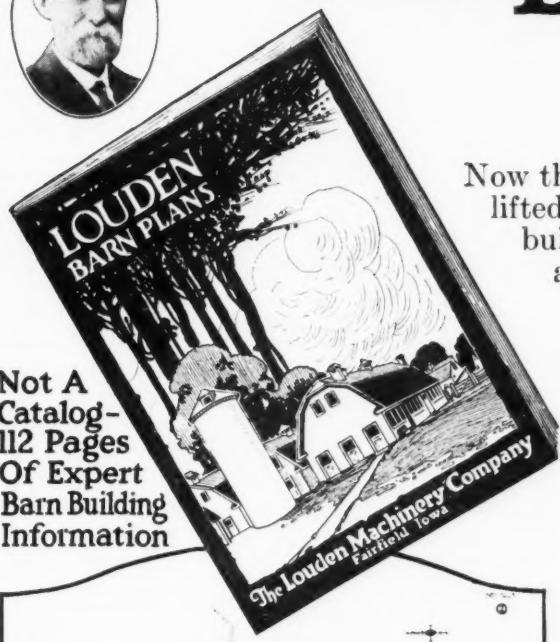
All employers wishing to get in touch with these men should communicate with the professional section, United States Employment Service, Department of Labor, Washington, D. C.

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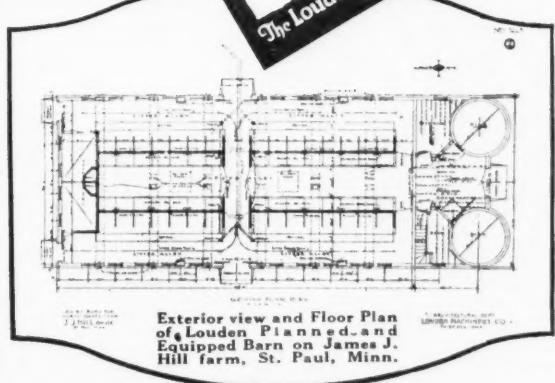
LOUDEN

Barn Plan Book

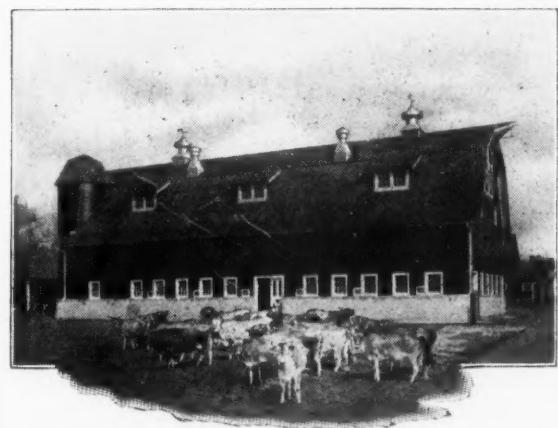
Prepares Carpenters and Builders for the Barn Building Boom



Not A Catalog—
112 Pages
Of Expert
Barn Building
Information



Exterior view and Floor Plan
of Louden Planned and
Equipped Barn on James J.
Hill farm, St. Paul, Minn.



Now that the restrictions on farm building have been lifted there is a great activity among farmers to build new barns or remodel old ones in order to accommodate larger herds and bigger crops.

Let Louden Help You Get the Business

We want to send you the "Louden Barn Plan Book." This is not a catalog with only a few scattering pages devoted to barn plans, but instead is a thorough, comprehensive, 112-page encyclopedia of barn building information with many illustrations, including 74 views of barns, with floor plans and estimated cost. Gives cross section views of elevations, details of truss, floor and roof construction, chapters on concrete work, ventilation, lighting, drainage, silo building, strength of materials, etc., etc.

We Want to Send You This Book Postpaid Without Charge

on receipt of one or more names of prospective builders in your locality. A little inquiry will prove to you that there are many who intend to build. We will send our literature to the names you send us and help you get the business.

Our architectural department, the greatest organization of its kind in America, is at your command for helpful advice and blue prints on any proposition you have in mind—without charge. Complete working plans, lists of materials, etc., at nominal cost.

You Also Need the Louden General Catalog

It shows the complete line of Louden Labor-Saving Barn Equipment which has been installed in over a million barns. Stalls and Stanchions, Feed and Litter Carriers, Animal Pens, Hay Unloading tools, Power Hoists, Barn and Garage Door Hangers, Cupolas, Ventilators, Sanitary Water Bowls, "Everything for the Barn." Postpaid on request, no charge or obligations.

Get busy building barns, fill out and mail us the coupon.

The Louden Machinery Co.
(Established in 1867)
5526 Court St., Fairfield, Iowa
Branches: St. Paul, Minn.;
Albany, N. Y.; Chicago, Ill.

The Louden Machinery Co., 5526 Court St., Fairfield, Iowa.

Please send me without charge or obligation, the books checked below:

Louden Barn Plans
 Louden General Catalog

Prospective builders in this vicinity are:

.....
.....
.....
.....
.....

My name

P. O. State

By Building Now, the Property Owner Will Help Create Era of Prosperity

By Noble Foster Hoggson

President Hoggson Bros., Builders, New York

BUILDING—construction work—has, almost over night, leaped from a non-essential classification to the greatest of all activities. In the initial order of the War Industries Board lifting the ban on prohibited businesses and industries, construction work was first on the list of releases, and within a week all restrictions on private or public construction were removed.

That really was not surprising. Every student of the problems of reconstruction has predicted in his calculations that building would be the supreme activity of early peace times.

Every indication points to these predictions coming true. There is serious economic need for new buildings, mainly because the building industry has been depressed for years. There is an acute shortage of almost every kind of structure, ranging from small houses for workmen, increased peace-time factory and plant extensions, to banks, large hotels and office buildings. Soon there will be an unprecedented rush of building. Architects will be given commissions that will flood their offices—so long parched and dry—and orders for plans will be numbered in the order of their

receipt and taken care of in their respective turns. The manufacturers of building material will be utterly unable to fill the avalanche of orders, not alone for the construction work to be done in this country, but for the re-building of France and Belgium. Almost every ship that sails for Europe will carry a full cargo of building material, supplies and equipment.

It is idle to talk of awaiting the report of this commission or that commission to proceed with the work of reconstruction. Only the indolent-minded individual is content to sit back and wait for some body of men to do his thinking for him. The problem of reconstruction is an individual problem.

The man who has been intending to erect a new building or alter or remodel an existing structure, but who has deferred his work either because of the ban on construction or for certain other reasons, has exceptional opportunity for doing something definite in the matter now.

Many of the best authorities argue that the prices on building materials are not likely to make any decided change in the near future—perhaps not for some

(Continued to page 102)

One of the Goulds Hi-Speed Pumping outfits — A new line containing 13 different outfits for gasoline engine or electric motor drive. For either open or compression tank water systems. Two sizes: 3 and 6 gal. per minute for pressures up to 43 lbs. or elevations up to 100 ft.

Goulds Fig. 1482 Distributing Force Pump Head — Distributing valve operated by Hand Wheel above spout allows water to be delivered either at spout or forced underground to desired point. For engine, windmill or hand operation. For filling tanks up to 200 feet above level of water.

Goulds Pyramid Pump Fig. 1531—For open or compression tank water systems. For direct or belted drive from electric motor or belted drive from gasoline engine. Capacity 6 to 114 gal. per minute against pressures up to 75 lbs. or elevation up to 175 ft.

Goulds Fig. 1680 — Combined Deep Well Working Head and Jack. Easy to install. Flange (in center) screws on end of well pipe which fits into recess in base that supports the pipe, allowing top part of pump to be installed with ease. For filling tanks not more than 190 feet above water level. For engine, windmill or hand operation.

Pumps For Water Systems

Engine-driven, electric-motor-driven, hand and windmill operated pumps for both open and compression tank water systems.

Our book, "Pumps for Every Service", shows our complete line. Write for copy today.

The Goulds Manufacturing Company
Main Office and Works: Seneca Falls, N.Y.

New York	Boston	Chicago	Atlanta
10 Murray St.	55 Pearl St.	12-14 Clinton St.	3rd Natl Bank Bldg.
Pittsburgh			Philadelphia
635 Henry W. Oliver Bldg.		111 No. Third Street	
Washington		Houston	
338 Munsell Bldg.		1001 Carter Bldg.	

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



"A Man and a Half"

is the man provided with a G-E motor-driven machine. Close the switch and in an instant the machine is up to speed.

The turn of a controller handle gives varying speed where required.

For heavy work nothing equals the steady, willing power of the electric motor.

G-E motors never hesitate—they operate for years with only an occasional oiling.

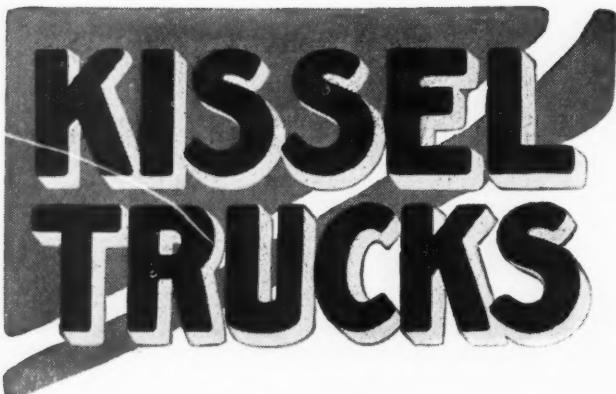
Ask your electric power company or our nearest motor agency about G-E motors for your shop.

General Electric Company

General Office,
Schenectady, N. Y.



Sales Offices in
All Large Cities



"First in War— First in Peace"

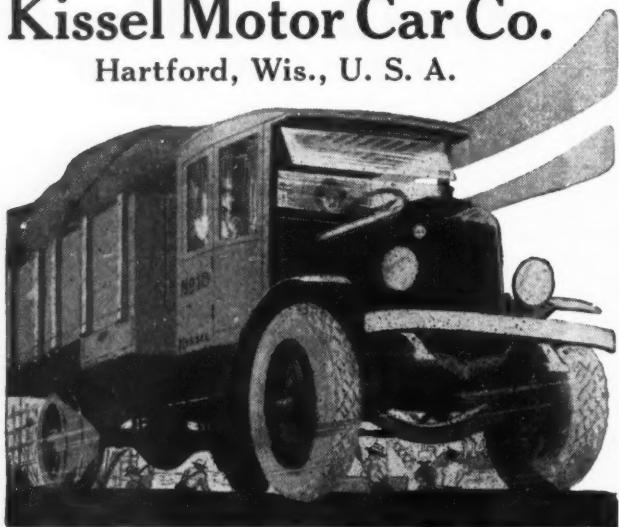
JUST as Kissel Trucks were first in meeting the wartime demands made upon industrial America, so they are first in solving the extraordinary problem of peace times. It is in meeting Carpenters' and Builders' increased haulage demands that Kissel Trucks give evidence of their real superiority.

The sound Kissel construction features, including the ALL-YEAR Cab that insures continuous use of Kissel Trucks throughout the winter months, will enable you to set a transportation pace from **now** on.

If you have been disappointed in being unable to buy Kissel Trucks for some time past—see your nearest Kissel dealer today for earliest delivery.

Kissel Motor Car Co.

Hartford, Wis., U. S. A.



By Building Now, the Property Owner Will Help Create Era of Prosperity

(Continued from page 100)

years. On the other hand, it is possible, considering the high rentals prevailing, that a building erected now at present prices of material and labor will produce a greater return to the owner than a building erected two years hence.

From many points of view, economic as well as social, it seems propitious to have plans for building made now, so that every individual will at this time put into actual practice a bit of work that is going to be a step towards the great work to be done. Such action will help to stabilize industry in this period immediately preceding and which will follow the formal declaration of peace.

Let us build—let us create—let us stage the great drama of the city streets on every corner where a new building should rise on a vacant lot. Let us begin now our plans of reconstruction; our plans to provide employment for the returning warrior and for the loyal warriors who remained behind and helped make possible the great success of his brother in arms across the seas.



The Job Only Half Done

Victory Won—and the Job Half Done!
Glory perched on the Stars and Stripes.

Immortality set as a halo on the brows of the conquering Americans.

By vote of the French Parliament this proud tribute inscribed on the walls of every school in France for the inspiration of all French children forever.

"President Wilson and the American nation, the Allied nations and the men who have led them deserve well of humanity."

But the Job is only half done.

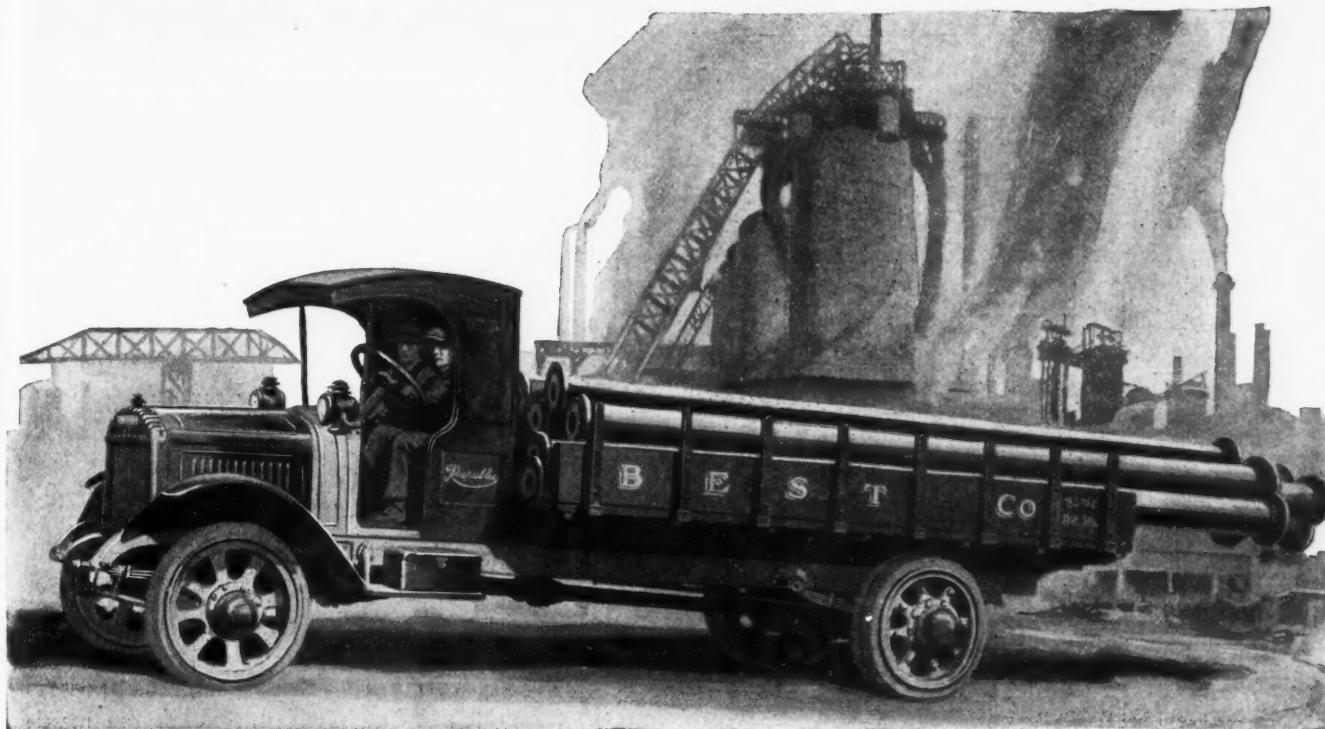
The job will not be done until the last American on foreign soil has been borne home in triumph to his grateful countrymen. The American soldiers in France have a right to be restored promptly to the blessings and privileges of American citizenship. It is true they went overseas to fight for us, to carry the Starry Flag to glorious victories at Cantigny, Dormans, Chateau Thierry, St. Mihiel, and Sedan. It is true they added to American history a radiance as brilliant as that shed over it by the patriot heroes of Lexington and Bunker Hill. It is true they have completed their job—of fighting, suffering, dying for the American ideals of Right and Liberty. But how about us who stayed at home?

Let's Finish the Victory at home, as they finished the job over there. The government is spending about \$2,000,000,000 a month paying the bills that had to be incurred to make the Victory possible. Most of the money raised by the first four Liberty Loans has been used up, but the boys still are in Europe. Every man of them has a right to the best of food, clothing, care, and recreation. The plainest rule of gratitude and fairness dictates that we must give the best we have to men who offered their lives so gloriously for us and the nation.

The government must raise billions more money to pay the bills and bring home all the conquering Americans and relieve the sufferings of Allied peoples. There will be a Fifth—a Victory Loan—sometime in the spring.

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Marsha
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Reproduced from an actual photograph of a Republic 5 1/2-ton truck

SOME PITTSBURGH USERS
OF REPUBLIC TRUCKS

Riter-Conley Mfg. Co.
Carnegie Steel Co.
Dauer, Close Furniture Co.
Equitable Gas Co.
H. C. Frick Coke Co.
Blanch's Transfer Co.
Gersner Boiler Works
Pennsylvania Hide & Leath. Co.
Hope Natural Gas Co.
Pittsburgh Foundry & Mch. Co.
Keystone Bronze Co.
Armour & Co.
Liberty Refining Co.
Beaver Refining Co.
American Sheet & Tin Plate Co.
May Lumber Co.
Baker Office Furniture Co.
Am. Fdry. & Construction Co.
Meadow Lanes Coal Co.
Ziegler Lumber Co.
Geo. R. McAbee Fdr. & Oil Co.
Consolidated Ice Co.
W. E. Osborn Co.
P. & A. Telephone Co.
Homestead Steel Works
Best Company
People's Natural Gas Co.
Keller Piano Co.
Petroleum Products Co.
Consolidated Coke Co.
Marshall Bros. Elevator Co.
Columbia Steel & Shafting Co.
Pittsburgh Coal Co.
Follansbee Bros. Co.
Pittsburgh-Des Moines St'l Co.
Equitable Coke Co.
Famous Biscuit Co.
Enterprise Stamping Co.
Pittsburgh Leather & Glue Co.
Duquesne Packing Co.
Pittsburgh Melting Co.
Raistway Industrial Eng. Co.
Kelly & Jones Co.
Vanadium Alloys Steel Co.
Western Electric Co.
Bituminous Coal Corporation
Aluminum Co. of America
The Fairbanks Co.
Pittsburgh Bureau of Engin'g
Copeland Coal Co.

In Pittsburgh, with its hills and heavy hauling, where power and stamina are absolutely essential; half of *all* the motor trucks in use are Republics.

"We found Republic Trucks so satisfactory in spite of over-loading and strenuous overtime service that we have just purchased another Republic," say Best Company, manufacturers of pipes, valves, etc.

"Because of the demonstrated efficiency of the first Republic we purchased, we are now using a fleet including 1 1/2, 2, 3 1/2 and 5 ton, all Republics," say W. E. Osborn Co., large wholesale produce dealers.

"In spite of the severity of service in the oil and gas fields and over difficult country roads our Republic Trucks have been absolutely trouble-proof," say People's Natural Gas Company.

"Even the additional abuse of war-time driving has had no apparent effect on the Republic Trucks which we have had in operation for three years. They continue to give the most satisfactory service," say Ziegler Lumber Company.

Other examples of Republic quality and dependable service could be given without limit.

Republic Special, with body . . . \$1295
Model 10-1 Ton, with body . . . 1535
Model 11-1 1/2 Ton, chassis . . . 1885

All prices F. O. B. Alma, Michigan

Each of the owners listed in this advertisement and hundreds of others have learned the efficiency and economy of hauling with Republic Trucks. That is why there are as many Republic Trucks in operation in Pittsburgh as there are of all other makes combined.

In every city, in town and country—wherever motor trucks are used—Republic Trucks will be found, in constantly increasing numbers, performing hauling tasks of the most exacting kind.

Republic Trucks are designed and produced by specialists who know the severest conditions met by trucks in any kind of hauling anywhere and provide ample strength and power to meet them.

More than 1300 Republic Service Stations, distributed all over the United States, insure prompt, reliable service to Republic Truck users everywhere.

There's a Republic Truck to exactly fit the needs of *your* business. See the Republic dealer and let him help you select the model which will best meet your requirements.

REPUBLIC MOTOR TRUCK CO., INC.
Alma, Michigan

Model 12-2 Ton, chassis	\$2275
Model 10-3 1/2 Ton, chassis	3450
Model V-5 Ton, chassis	4750



The Torbensen Internal Gear Drive, used in all Republic Trucks, delivers 92% of the motor power to the wheels. We know of no other type of drive that delivers as much. The entire load is carried on a separate I-beam axle. The driving mechanism has nothing to do but drive the truck.

REPUBLIC

Internal Gear Drive

MOTOR TRUCKS

Built by the Largest Manufacturers of Motor Trucks in the World

Better Heated Houses on Smaller Coal Consumption

THE IMPORTANCE OF EFFICIENT HEAT-INSULATION IN AIDING FUEL CONSERVATION

By Austin Bolam, B. S.

of the Magnesia Ass'n. of America

FOR half of the year at least heat is a vital problem of our existence. Few indeed are the homes where some form of heating apparatus is not needed, and in most instances this takes the form of steam, vapor, hot water or hot air.

Thus shoveling coal and cleaning ashes are familiar winter chores to most householders. Familiar also is the insistent cry for "more heat" as the mercury subsides toward the zero mark. Many a store of bottled-up expletives is expended in futile attempts to produce the necessary extra temperature simply because a large percentage of the heat produced is wasted.

Heat is an elusive demon. He crawls out by all kinds of unsuspected corners. He gets lost in passages, closets and corners. He seems to have a faculty for going anywhere but where he should. But, like other notorious prison breakers, he can be effectually confined and made to work if a few very simple rules are first understood and then properly carried out.

That the metal of our pipes, boilers and radiators is a good conductor of heat is well known. What is

not so generally understood is that, while heat escapes readily from a radiator, it escapes also, just as easily, from every other part of the heating system.

Therefore while we should have our radiators free to give out heat, we must take ample precautions to prevent the waste of this heat *before* it reaches the radiators—while it is generating in the boiler and passing thru the pipes. Otherwise we shall never have an evenly heated house. The farthest-off rooms will be always cold, simply because there is not enough heat to "go round"—and to heat all outdoors as well.

Now the remedy for this is not to increase the size of the boiler but to protect the heat from loss by an efficiency heat-saving covering on the pipes and boilers. Such a covering (or insulation) must possess certain essential properties. It must save the maximum of heat. It must be easily applied. It must be durable, so that it lasts at least as long as the pipes and boilers it protects. It must be a real coal saver and not merely a camouflage. It must be used *all over* the heating system and not merely in the basement.

(Continued to page 106)

It is now so easy

for any Carpenter or Farmer to quickly construct a strong and substantial wagon bed or hay rack by using our new

Hay Rack and Wagon Bed Hardware

SEND FOR DETAILS
Today Without Fail

SOLD BY LEADING
DEALERS

ALLITH-PROUTY CO., Danville, Ill., U. S. A.

Chicago New York Boston Philadelphia San Francisco Los Angeles

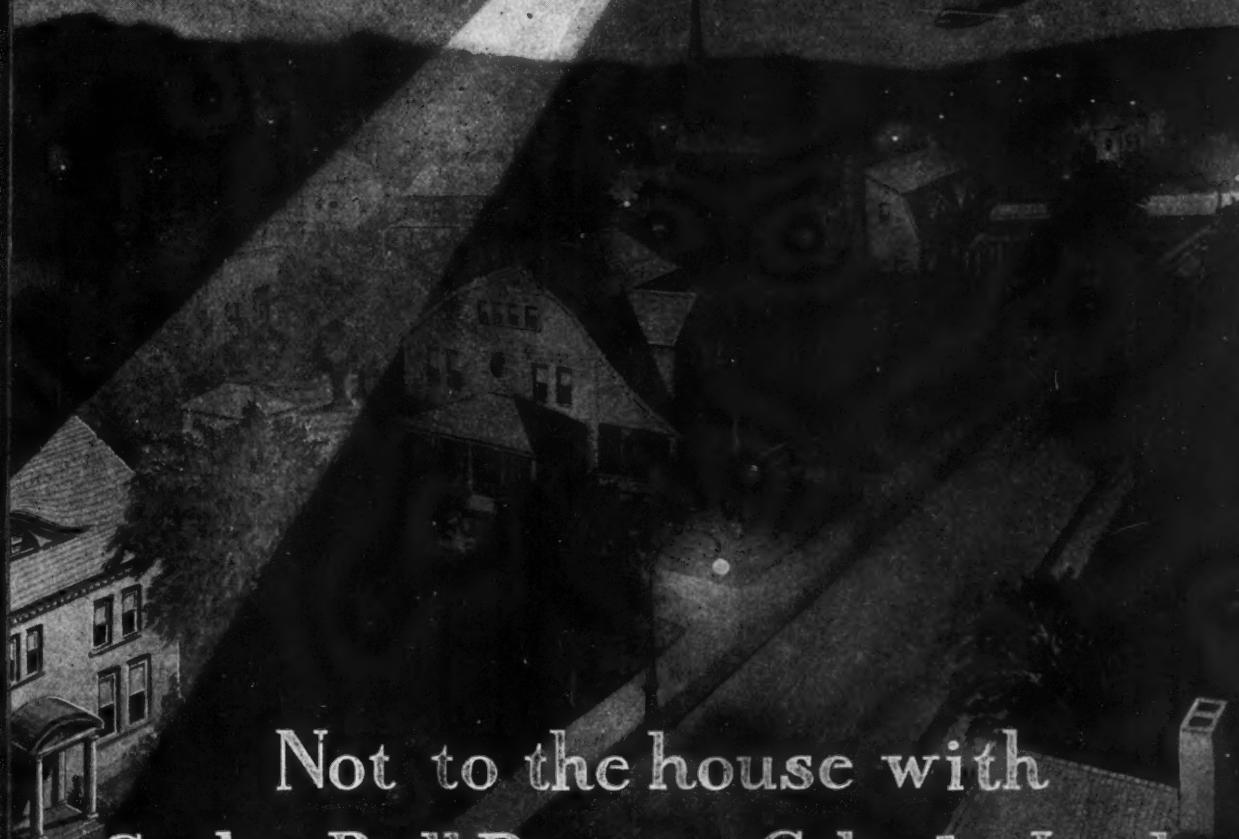
And Representatives in All Principal Foreign Cities

PRODUCTS: Door Hangers and Tracks Rolling Ladders Overhead Carriers Light Hardware
Spring Hinges Fire Door Hardware Garage Door Hardware Hardware Specialties

Catalogs, blue prints and special information promptly furnished

OUR ENGINEERING SERVICE IS AT YOUR DISPOSAL WHENEVER DESIRED

WHERE WILL HE GO?



Not to the house with
Corbin Ball Bearing Cylinder Locks



A Money-Maker for Builders and Lumber Dealers

We furnish the fixtures only. You purchase your staves direct—save handling, freight—build up business under your own name—make all the profit—give the farmer a better silo for less money.

Selling silos built with SECURITY Silo Fixtures is permanent, profitable business, a staple necessity that sells readily year after year. Some SECURITY dealers have sold 20 to 50 silos yearly for last five years.

We help you with lowest silo fixture prices in the field and new selling plans that get the farmer's interest.

Security Silo Fixtures

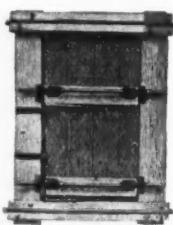
Supply the selling features that farmers want. Make silo easier to erect—simpler to handle. Superior sagless hinge door and collapse-proof anchorazee. Safety ladder. Make a silo that produces best silage.

Dealers testify that they can beat all competition and prices and make good profits.

A million silos are still needed on American farms. Hundreds—thousands of dollars in profits can be made yearly with our plan and SECURITY fixtures.

COMPLETE DETAILS FREE
WRITE TODAY

Chicago Warehouse & Silo Fixture Co.
329 So. LaSalle St. Chicago, Illinois



Better Heated Houses on Smaller Coal Consumption

(Continued from page 104)

Properly insulated pipes and boilers (and these remarks apply equally to hot air furnaces and ducts) mean not only more heat, but less coal shoveling, less ashes and longer periods between firing. All of these are summed up in one phrase—"Fuel Saving"—a vital and patriotic necessity at the present time, and at all times a matter of importance to the owner of any building, whether home, hotel, office, skyscraper or power plant.

Many materials have been used for this purpose. Few of them satisfactory because they lack the essential principles of a proper heat-insulation. In many instances they will be found so hot on their outer surface that the hand cannot remain on them—clear proof that they are heat-wasters and not heat-savers.

The following figures lately compiled by the Mellon Institute of Industrial Research of Pittsburgh University show the actual *monthly* dollars and cents, saving 100 feet of pipe by the use of "85 per cent magnesia" insulation on low-pressure systems.

Size of Pipe, Inches	5 Lbs. Steam Pressure	10 Lbs. Steam Pressure	50 Lbs. Steam Pressure
$\frac{1}{2}$	\$1.44	\$1.58	\$2.20
$\frac{3}{4}$	1.72	1.89	2.87
1	2.11	2.30	3.56
$1\frac{1}{4}$	2.52	2.74	4.22
$1\frac{1}{2}$	2.86	3.10	4.73
2	3.53	3.74	5.86
$2\frac{1}{2}$	4.25	4.39	6.95
3	5.00	5.33	8.30

Boilers and flat surfaces per 100 square feet $1\frac{1}{4}$ inches thick 5.26 5.67 8.80

There is a side to this of interest to the builder which is, however, seldom recognized. A well-heated house is always more salable than a poorly heated one. A house where the heating system is properly protected by a first-class insulation, such as "85 per cent magnesia," will require a smaller boiler, and this smaller boiler will give equal heat on less coal consumption. This is always a good talking point and one that will frequently turn the scale when the buyer's mind is pretty equally balanced between rival houses.

Here is a true story that illustrates the actual comfort and saving that comes from careful application of a good heat insulation:

Last January during the "zero spell," in a Philadelphia suburb, a gentleman calling on an invalid friend exclaimed:

"How warm you keep it here; warmest place I've been in for weeks. You certainly are shooting your drafts as if you never heard of a coal shortage."

"No," said the invalid. "I'll bet you a box of cigars that if you go down cellar you'll find every draft shut and every damper open."

(Continued to page 108)



Make Better Satisfied Customers With Exclusive Star Features

TAKE advantage of exclusive Star Features by making them help *you* in your business. They will save you time and expense in installing the equipment and make a better looking job of installation to your credit.

Star Stalls are built into separate units. Each stall connects with the other.

This means convenience and economy in installation and letting the system grow with the herd.

The Star Curb Clamp simplifies installation by doing away with curb anchors and templates.

The Star Alignment Device keeps every cow in line at the gutter by simply moving

the stanchion backward or forward.

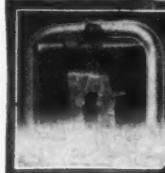
The Star Stanchion can be adjusted to fit the neck of a young heifer or the heaviest bull by adjusting two counter-sunk screws. These and other important exclusive features mean easier and better jobs of installation and better satisfied customers.

Also recommend and install Star Litter Carriers. You cannot only point out important features for convenience and durability, but supply the carrier equipment needed for any type of barn.

WRITE FOR OUR CATALOG

and let us tell you about the Star Line and our architectural service in making barn plans for you and your customers.

HUNT, HELM, FERRIS & CO.
Complete Barn Outfitters HARVARD, ILLINOIS
Eastern Branch—Industrial Bldg., Albany, N. Y.



Alignment Device—
Every Cow in Line
At the Gutter



Star Unit System—One
Stall or a Hundred,
Always Fits the Herd



Adjustable Width
Stanchion—Fits the
Neck of Any Animal

Better Heated Houses on Smaller Coal Consumption

(Continued from page 106)

"I'll take you," replied his visitor, and went down to inspect.

When he returned he said: "Cigars are yours. While it's zero outside, the thermometer on the newell-post says 74 degrees. But I've found why; you've got your boiler and pipes cased in '85 per cent magnesia' coverings."

"That's the secret," laughed the host. "My next-door neighbor has just about the same heating space as I have, and he has the same kind of heater. But take the winter thru and my unprotected neighbor will burn about 20 tons, he tells me, and his house isn't as warm as mine is on only 12 tons."

Competent engineers estimate this saving by insulation at from 20 per cent to 33 per cent of the actual coal consumed by a non-insulated house. Such a saving not only speedily pays for the whole cost of the insulation, but continues thereafter as long as the building remains.

There has been a wonderful advance during recent years in most items of the equipment of the modern residence. Modern heaters have displaced the old-time inefficient ones, but much of the utility of the most up-to-date heater is lost, unless the heat it pro-

duces is properly cared for afterwards and every particle utilized to the utmost advantage. Proper insulation is the only answer.



Inside Pipes and Fixtures

(Continued from page 45)

Water pipes not seen are usually of galvanized iron. Pipes exposed to view in the kitchen and laundry look better if made of brass. Nickel plating further adds to the appearance of bathrooms or other places where plumbing is seen. Cold-water pipes, because of the condensation of moisture from the air and the drip on floors, should never run along the ceilings of rooms. All pipes should slope slightly so that the entire hot and cold water systems may be drained at low-situated faucets and at the stop and waste cock in the cellar.

Range boilers may be galvanized iron or copper and are made in various sizes and strengths. Galvanized boilers may be set vertically or horizontally. They usually are riveted, have capacities between 20 and 190 gallons, and sometimes are fitted with a steam coil so that other heat than the kitchen range may be utilized. Copper boilers are seamless or have brazed joints, may be tin lined, and often have inside ribs to strengthen and stiffen them. Capacities run from 30 to 250 or more gallons. Because of better appear-

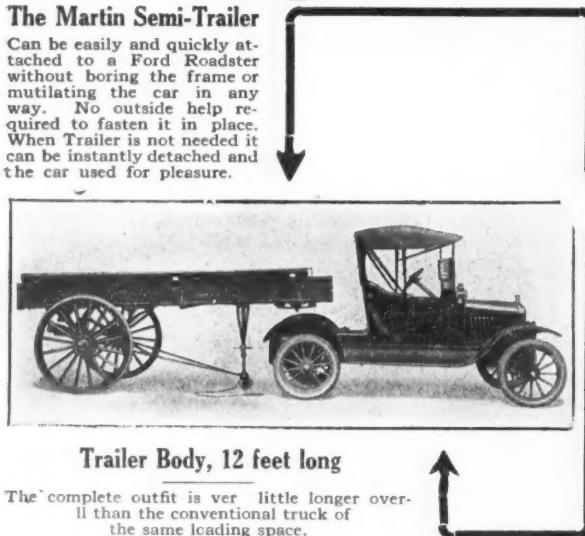
(Continued to page 110)

ORDER NOW and be SURE of HAVING YOUR HAUL- ING EQUIPMENT READY for THE SPRING RUSH

A Complete Outfit to Haul 1 Ton

The Martin Semi-Trailer

Can be easily and quickly attached to a Ford Roadster without boring the frame or mutilating the car in any way. No outside help required to fasten it in place. When Trailer is not needed it can be instantly detached and the car used for pleasure.



Trailer Body, 12 feet long

The complete outfit is very little longer overall than the conventional truck of the same loading space.

for \$500.00

Think of it !!!— Only \$500.00 !!!

This new Martin semi-trailer costs \$250.00

This slightly-used Ford Car costs \$250.00

\$500.00

A Martin Semi-Trailer and a Ford Make the Lowest Priced and Most Efficient One-Ton Truck in the Entire Commercial Car Field

With a Martin Semi-Trailer, a Ford Car Can Easily PULL a Ton Without the Least Strain on the Driving Mechanism. Can be backed, turned and handled in the narrowest quarters.

(The reason why this is possible is fully explained in a catalog which will be sent on request)

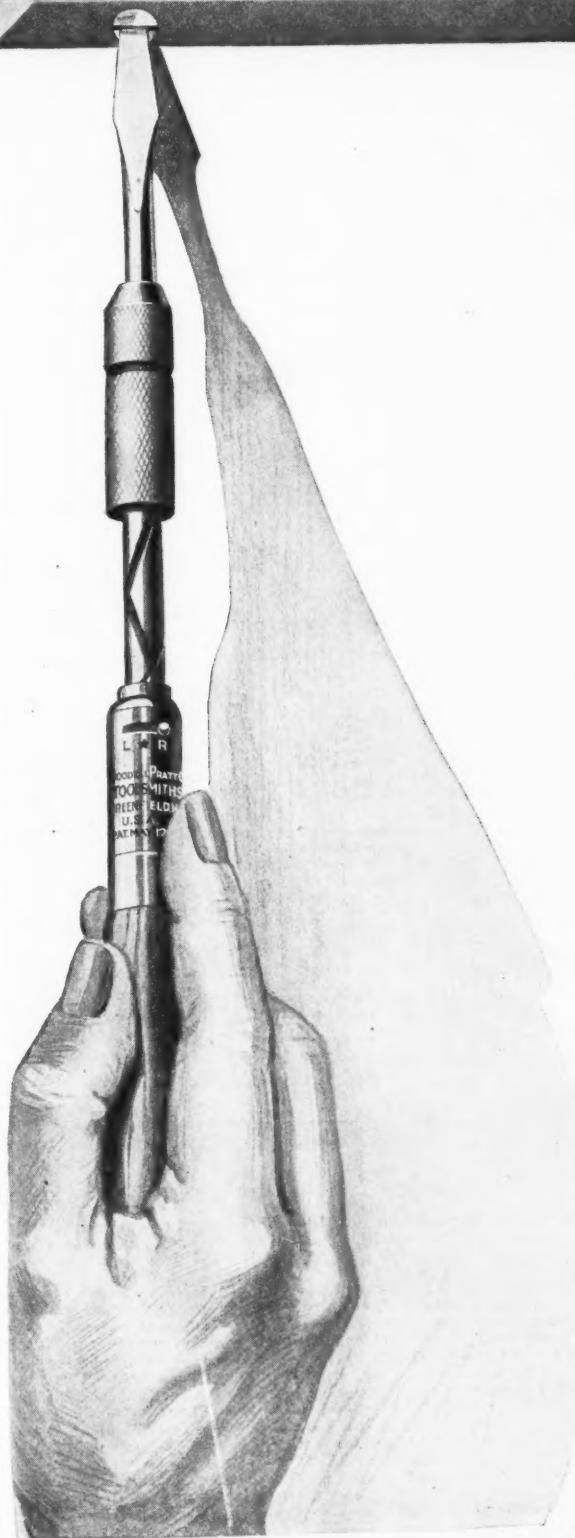
We Have Trailer Equipment to Haul Loads from One to Ten Tons

Write for Full Information

MARTIN ROCKING FIFTH WHEEL CO., Springfield, Mass.

GOODELL PRATT

1500 GOOD TOOLS



Spiral Ratchet Screw Driver No. 111

With three interchangeable tool steel blades

The angle slant of the Spiral determines the relative power of an Automatic Screw Driver

Heavy, strong and practical, this Spiral Ratchet Screw Driver should last a lifetime. It can either be used for right or left hand work, automatically, or by use of the ratchet mechanism. By setting the Shifter Knob at the star marked on the polished ferrule, it becomes a stationary Screw Driver.

Despite the various operations this tool can perform, the mechanism remains simple and durable. A turn of the Shifter Knob moves a ring which throws the Dogs into the required position. These Dogs act upon the Spiral Nuts and are made of hardened steel.

This screw driver is a very handy tool for finishing work, and such operations as the mounting of springs and door escutcheons.

The best way to appreciate this screw driver is to own one, and the first step toward owning one is to go to your hardware dealer and ask to see one. We feel confident that you will be so impressed by its construction and finish that nothing short of owning one will satisfy you.

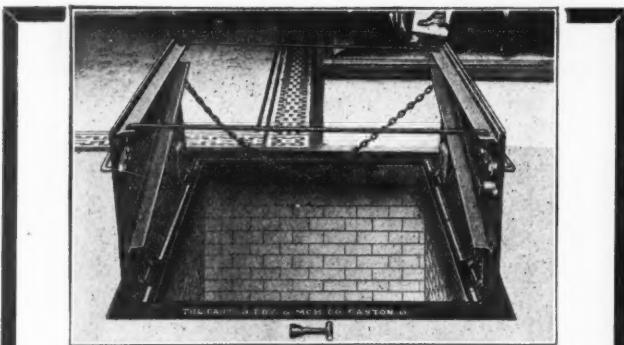
Spiral Ratchet Screw Driver No. 111 is typical of the Goodell-Pratt line of 1500 different tools. Every tool of this complete line is built with the same care, by the same skilled workmen and with the same determination to make it the best of its kind that this automatic screw driver is. That is why carpenters who use Goodell-Pratt Tools have pride and confidence in them—pride in their design and finish, confidence in our claim that they will last a lifetime.

GOODELL-PRATT COMPANY

Toolsmiths

GREENFIELD, MASS., U. S. A.





Can You Afford

not to install "CANTON" sidewalk doors and COAL CHUTES, Mr. Builder?

Immense Profits

Because of the extreme need of installations of this kind CANTON SALES ARE EASY.

Burglar Proof

and up to the minute in appearance—actually adding to the appearance of the walk.

Write for Fully Illustrated Catalog B-8

Canton Foundry & Machine Co.
Canton, Ohio

50% Less Fuel Producing 100% More Heat

Guaranteed by Bond
The Only Furnace that Insures Clean Air
Big Money for You

Meets Abnormal
Costs of Material
and Labor

Simple to Install
Easy to Operate

We Want Good,
Active Men to
Represent Us.

*Write today for our special
agency proposition*

MAIL TODAY

Standard Heater Co.
438 W. Ontario St., Chicago
Send me your Special Agency
Proposition to Contractors.

Name.....
Address.....



STANDARD HEATER CO.
438 West Ontario Street
CHICAGO, ILL.

Inside Pipes and Fixtures

(Continued from page 108)

ance and less liability to leakage and corrosion, copper boilers are preferred to galvanized-iron boilers. Formerly a small gravity tank equipped with a ball cock in an upper room or attic was much used in connection with range boilers, and in such cases lightweight boilers could be used. It is better, however, to have the boiler heavy enough to carry safely the full pressure of the supply tank or reservoir, and such boiler will better resist the corrosion that comes with long use. A suit-

(Continued to page 112)

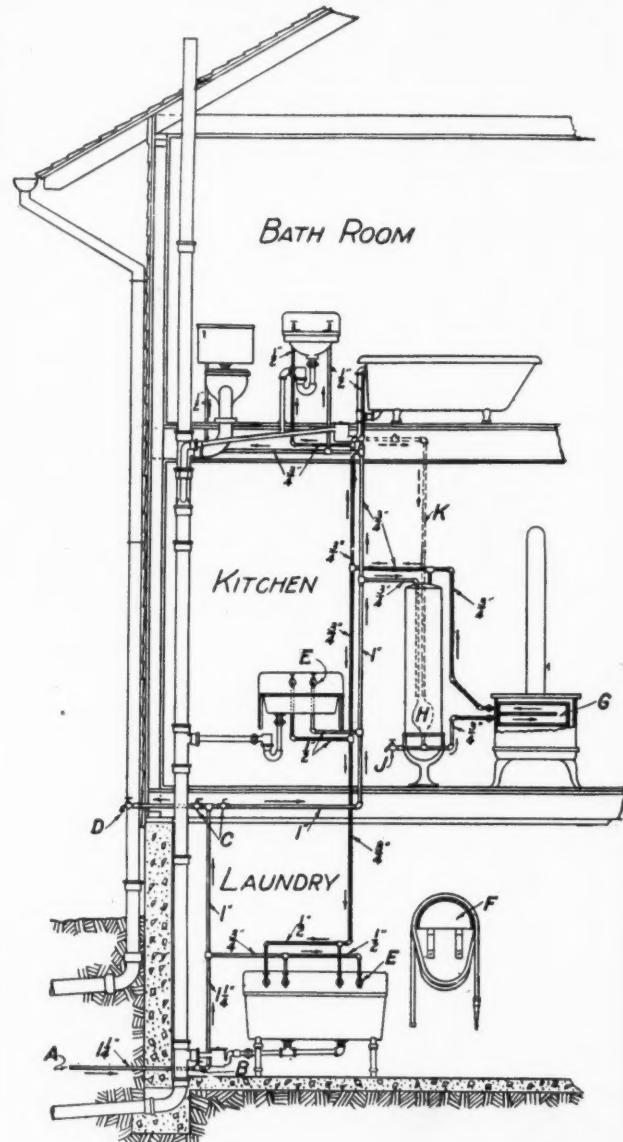
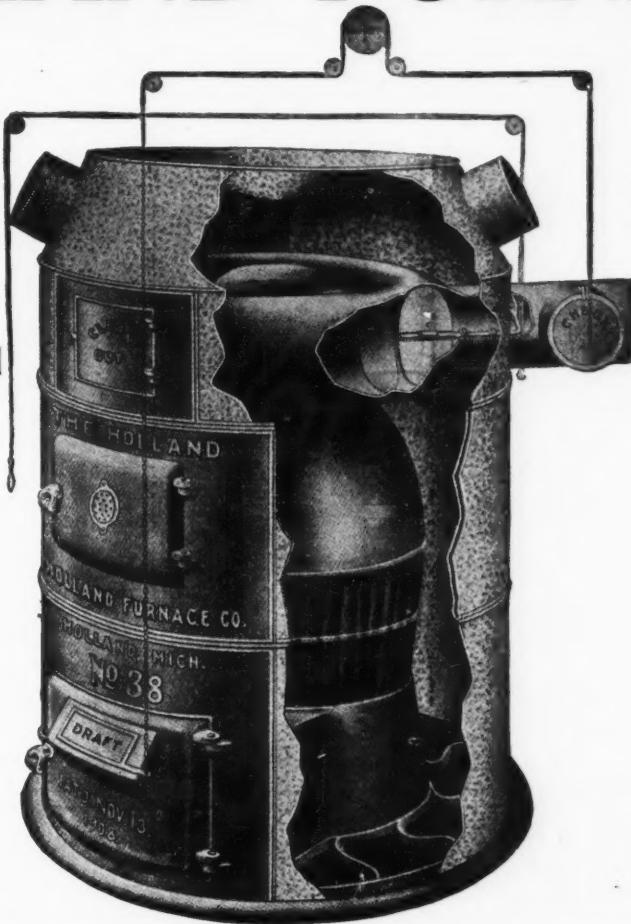


Fig. 2. An arrangement of pipes and fixtures in a well-plumbed farm house. A, Service pipe to house; B, stop and waste cock; C, stop cock; D, sill cock; E, hose bibb; F, hose and home-made, half-round wooden hose hanger (hanger may be made by nailing lagging to two half-heads of a barrel); G, kitchen range and water front; H, range boiler; J, hose bibb for draining boiler; K, return pipe (not absolutely essential, but improves the circulation of hot water and is of particular value where hot-water faucets are located far from the boiler). Prior to 1916 the plumbing installation here shown cost approximately \$280. This cost covered all pipes (rain conductor excepted), traps, valves, fittings, fixtures, the stove, and the labor and materials used in installing. The fixtures included a 5-foot enameled-iron bathtub, 20-inch enameled-iron wash-basin, vitreous china wash-down water-closet; 30-gallon galvanized-iron boiler, 1-piece enameled-iron sink, 18 inches by 36 inches, and a 2-compartment stone laundry tray. Due to the war-time advance in the cost of labor and materials from \$500 to \$600 should be allowed for the installation, complete, to-day (March, 1918).

HOLLAND FURNACES

Leads in Sales
in the 135
Cities Where
Now Introduced



Leads in Service
for City,
Suburban
Village and
Farm Homes

MAKE WARM FRIENDS

A Carpenter and Contractor is a good judge of a furnace. He acquires this because he has learned through observation and experience that if a man is absolutely pleased with his furnace—if his house is warm and comfortable at an economical heating cost—he naturally is better satisfied with everything else that was done in the building or remodeling of his house.

In other words, the Carpenter truly knows the furnace is the "heart of the home." Good furnace advice, therefore, spreads his good reputation.

Furthermore, Carpenters know the heating problem must be met scientifically. A furnace that is simply "guessed" into a house, runs ninety-nine chances out of a hundred against successful service.

Carpenters who have become acquainted with the Holland organization know the care and efficiency of all plans made for the individual conditions of each installation and the high standard maintained through the completion of every detail of the job.

Add to these essentials the advanced principles of its design and the dependability of its construction, together with the Holland Guarantee and the Holland Five-Year Service Bond, positively insuring heating satisfaction to every owner, and you will readily understand

why the leading conscientious carpenters and contractors in the six states where Holland Furnaces are now installed unqualifiedly recommend them.

The Holland Furnace Company has never expanded its sales faster than it could follow with efficient service. Branches are now located in 135 cities, each in charge of trained heating efficiency men, and the Holland Furnace leads all others in sales in each and every one of those localities. Holland reputation is not built upon promises; but upon actual service. The first branches established increase sales each year and remain the largest producers of business—built upon proved service.

The Holland burns fuel scientifically. The cone grate breaks up clinkers and compels fuel to roll to the walls of the fire pot. Air is mixed with the gas—the fuel burns from the sides and over the top in the only natural way to compel 100% of heat radiation. All gases and soot are burned. No internal explosions or "puffing." The Holland is clean, healthy—efficient.

High test cast iron construction, with the fact that all castings are evenly heated prevent warping or burning out, and have given the Holland a certified reputation as repair-proof. We have hundreds of statements from owners who have burned the Holland seven, eight and ten years without one dollar for repairs. Our statement that the Holland fire pot outlasts any other is based upon and proved beyond challenge by this evidence.

Carpenters' Opportunity

Write for our special proposition to you. We will send along our complete catalog, and will be glad to give you free heating plans and full information. Let us get better acquainted to our mutual advantage. Write us today

HOLLAND FURNACE COMPANY
Holland, Mich. "World's Largest Installers of Furnaces" TWO FACTORIES Cedar Rapids, Iowa

Inside Pipes and Fixtures

(Continued from page 110)

able capacity of boiler for an average farm or village home is 30 to 40 gallons. With two bathrooms or other large use of hot water the capacity should be increased materially.

Where the winters are severe and water pipes are liable to freeze, one should always assure himself before starting the range fire in the morning that ice has not sealed the water front or its connections. Continuance of the main supply may be ascertained by opening hot and cold-water faucets at the kitchen sink. This procedure, however, does not prove the absence of a freeze-up in the short connections between the range boiler and the water front. To further guard against range-boiler explosions, something that may happen wherever expansion is cut off thru closure of a supply-pipe valve or other stoppage, the boiler always should be equipped with a safety valve so arranged that nothing can interfere with its operation.

A word in conclusion: In each instance, before going ahead, study the local conditions. These, finally, must determine the main features of every installation. Were advice to be given in a brief general statement, it would be as follows: Make sure of the purity of the supply. If the supply is a spring or flowing well, deliver to the buildings by gravity, if practicable. Where a well is necessary, use a good, deep, dug or open-end tubular well fed from pure and unfailing

sources. Install such types of pumping machinery as best combines, simplicity, certainty, capacity, and adaptability. Provide liberal storage capacity, employing if possible an underground concrete reservoir on a nearby hill. Lay galvanized iron or cement-lined delivery pipe of ample size below the reach of frost. Arrange the house piping systems to admit of easy control, drainage, and repair. Use fixtures of simple, durable, yet pleasing patterns.



Cutting Roof Blockings

(Continued from page 39)

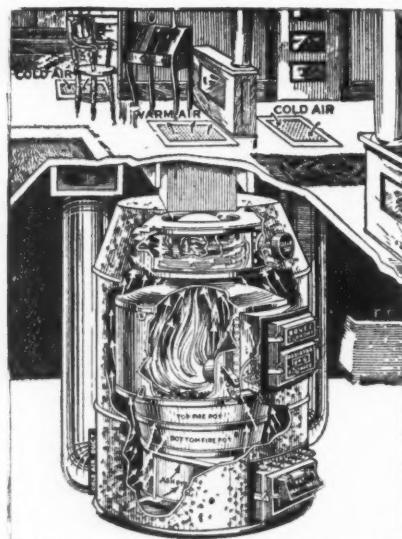
be amazed at the cost of this particular part of the roof.

The cutting of those blocks is very easily carried out, providing that one understands that these particular blockings at the hip rafter are just the same height at all points as the rafter blocking or the jack rafter blocking and that the only real difference is in the extended length due to the blocking making an angle with the front and return front of the roof.

The hip bracket is always longer than the rafter bracket and it gets longer as the angle between the front and return front of building becomes less in magnitude, thus in a right-angled corner the hip blocking is shorter than one on an obtuse angle.

What I always like to do when I have a job of

(Continued to page 114)



BOVEE'S PIPELESS FURNACES

Central Heating and Regular Pipe Furnaces

Bovee's Pipeless Furnaces four sizes. One Register. Cool basement. Easy to install. Very economical of fuel and very durable.

Bovee's Central Heating System Furnaces

Six sizes. One large warm air register. Other registers can be added if found necessary. Separate cold air ducts. Aids in circulation of heat and removes cold air from warm air registers. Ordinary rugs can be used.

Regular Pipe Furnaces furnished where registers are desired in each room. Send pencil sketch of building for estimate.

Horizontal Furnaces for 4-ft. wood or coal with double doors 16x16-in. or 17x21-in. furnished with Central Heating or Regular Piping

Buy from Manufacturers and Save All Commission, one-third the cost of your Heating Plant.

FREE CATALOGUE

BOVEE FURNACE WORKS, 50 W. 8th St., Waterloo, Iowa

More Heat—Less Fuel—Why?

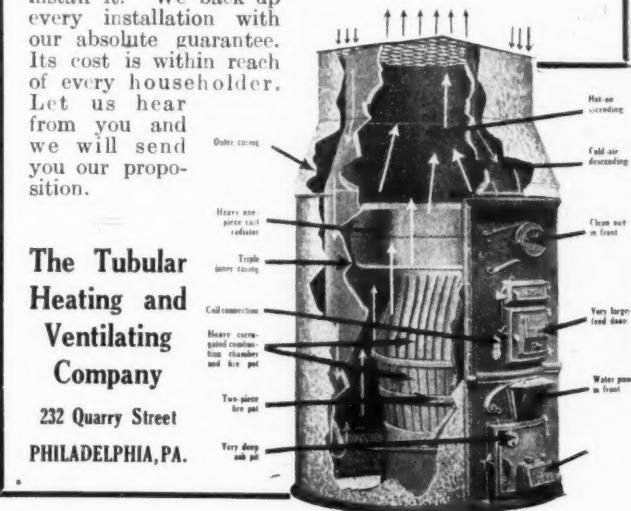
Eyston ONE-PIPE FURNACE

This furnace will burn with equal economy, hard or soft coal, coke or wood and burn LESS of it. It is the SAFE furnace to install, as its only hot-air connection is surrounded with a cold air duct.

25 to 40% Less Fuel

This saving means much to your clients and it makes the EYSTON furnace easy to sell. It is YOUR JOB to install it. We back up every installation with our absolute guarantee. Its cost is within reach of every householder. Let us hear from you and we will send you our proposition.

The Tubular Heating and Ventilating Company
232 Quarry Street
PHILADELPHIA, PA.



Hess Welded Steel Furnace

Burns hard coal, soft coal, slack, screenings, coke, lignite, wood or anything else combustible, and delivers all the heat --- Economical.

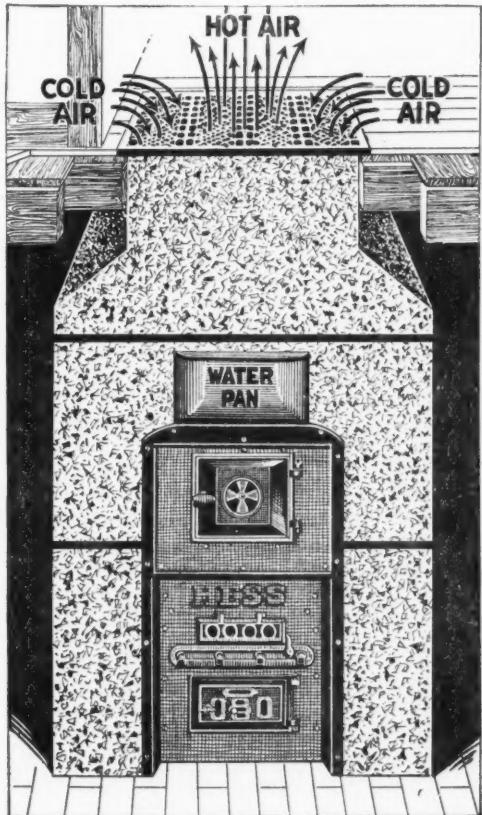
Every seam is riveted and then welded, making it permanently and absolutely tight. Never leaks gas or dust.

Simple and easily regulated: sends heat to the rooms, not to the chimney.

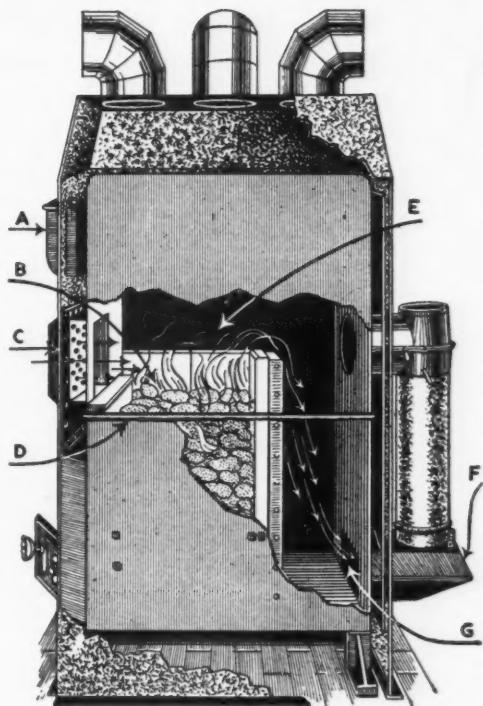
Durable, and inexpensive to maintain.

We are makers, not dealers, and will sell from our factory direct to you.

*Installment terms if you want them. We take *Liberty Bonds* (at market value) same as cash.*



The Hess Pipeless Steel Furnace
One register only—serves for both hot and cold air



The Hess Pipe Furnace
With separate pipes and registers

Ten Points of Merit

(See letters A, B, C, etc., in illustration above)

1. Large Combustion Chamber (E) free from obstructions. Air and gas mingle here, for good combustion. The cooler smoke separates and falls to the bottom.
2. Smoke Outlet (G) at the bottom. By exhausting here we draw away the cooler smoke and save the loss of heat.
3. Firebox (B) close up to the front door; easy to get at; convenient in operation.
4. Firebox (B) entirely inclosed by the heavy steel radiator, no leakage possible.
5. Heavy Firebrick Slabs (B). These accumulate heat, necessary for good combustion, for gases and smoke burn best at high temperatures. Cast iron fire bowls fail in this because of their radiating properties. Easily placed or removed through the fire door. No tearing down for this purpose.
6. Large grate area, admitting 25% to 40% more air for combustion than round grates in the ordinary construction. Our grates are of the rocking type.
7. Every Seam (D) riveted and then welded by melting the steel plates together where they meet. These seams never can open by expansion and contraction. Fire may be held as long as in the old fashioned "air tight" stove.
8. Perforated Fire Door (C). Fresh air sprays all over the fire, burning up gases and reducing the soot and black smoke from soft coal, producing flame instead of smudge.
9. Clean Out Door (F) through which all soot and ashes are easily removed. There are no flues nor contracted spaces inside, therefore no places for lodgment of ashes and soot.
10. Evaporating Pan (A) in a position where enough water evaporates to produce a healthful atmosphere.

Contractors, Attention We allow you an extra discount for resale. Many contractors are making extra money easily, buying and placing our furnaces. We supply plans and directions, and fully guarantee results; and we loan tools, when desired, for installation. Send us a sketch of your rooms to be heated and let us tell you what our equipment will cost. We will supply heating plans and our 48 page book on heating—FREE.

Hess Warming & Ventilating Co.
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Was \$100
Now \$57

NEW OLIVER NINE FOR NEARLY HALF

This is the most startling typewriter offer of all! A brand new, latest model Oliver for \$57. The identica model formerly priced at \$100.00. We make it possible for you to save \$43 by our new way of selling, ways we learned during the war.

We have found out that it is unnecessary to have great numbers of traveling salesmen and numerous, expensive branch houses throughout the country. We were also able to discontinue many other superfluous, costly sales methods. You benefit by these savings.

The Oliver Nine—our latest model—direct from the factory to you. It is the finest, the costliest, the greatest typewriter ever built. Used by the leading concerns.

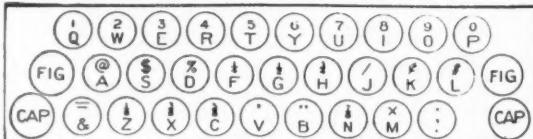
Who would ever pay over \$57 again for a new typewriter? Especially when we not only make a new low price, but also give the lowest terms—about 10 cents per day—over a year to pay.



Over 700,000 Sold

And remember, carbon copies of everything written, for your records.

Our new price and terms ought to sell an Oliver to every contractor. Longhand writing will be out of date among progressive men.



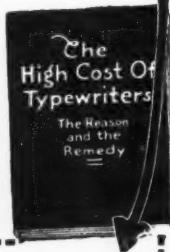
Free Trial—No Money Down

Just send for our amazing disclosure entitled "The High Cost of Typewriters—The Reason and the Remedy." Then ask for a trial. You are not put under the slightest obligation. It is our new-day way of selling. It saves money for both of us. You act as your own salesman—the Oliver itself must convince you. You pocket the \$43.

Send in the coupon below today for one copy of this sensational book that exposes the secrets of the typewriter world. (68.04)

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Mail me your book and further information—all free and without obligation to me.

Name _____

Street Address _____

City _____

State _____

Cutting Roof Blockings

(Continued from page 112)

this kind on is to have the roof drawn down full size and the moulds along with the blocking template made so that the whole lot can be cut with the yard saw.

After I make the moulds for the blocking, Fig. 1, I proceed to draw down the angles of the building and extend the length of the mould on to the line of the hip.

Thus Fig. 1 is shown with any number of points from which are drawn lines at right angles, these lines are continued forward till they meet the side of the hip and at that time are thrown up again at right angles to the hip.

The dotted line O 10 is then drawn parallel to the position of the hip and the various heights O K, etc., set off above the dotted line and D 7, etc., is set off below the line, each on its respective line

A few lines drawn thru these points obtained will give the shape of the angle block, as shown at Fig. 2 and as shown in position on the side of the hip and ceiling joist, Fig. 5.

In the cutting of the shaped upper edge of these blockings the hip blockings will be slightly beveled on the upper edge to meet the angled backing of the hip.

The angle which these edges are cut to are shown in Fig. 2.

The bevel is obtained by determining the contained angle between the two sides of the roof.

The rule as shown in Fig. 2 is at any point in the plan of the hip. Draw a line at right angles to it.

At the same point draw a line at right angles to the true shape of the hip giving L O.

With L as center radius L O, turn O on the center lines of the hip at P.

Draw P D and P E and the angle formed at the apex is the angle of the backing or the bevel to which the upper edge of the hip blockings should be cut.

Sometimes and almost wholly in English (Britain) the angle blocking is fitted in at the angle formed by the hip and ceiling; this, of course, means that only one blocking piece is required.

This makes very little difference in laying down the shape of the blocking pieces, only in this particular case we would project the lines on the center line of the hip, Fig. 4.

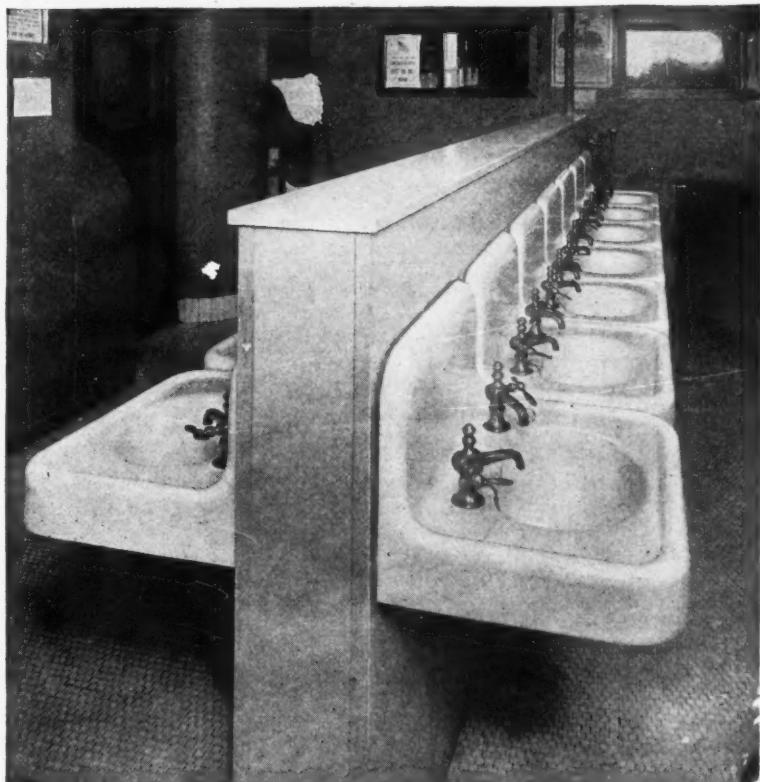
The heights are set off in the same way and the angle of the backing for the hip by the same method.

Of course, in cutting out this block the true shape would require to be cut out first.

Then the center line of thickness could be drawn down the curved edge and the band saw table tilted to the angle and the beveled edge of the blocking cut from each side of the blocking.

JOHN Y. DUNLOP.

Greenfield Tollcross, Glasgow.



Wolff Lavatory in Reid, Murdock & Co. Building, Chicago
George C. Nimmons, Architect C. J. Stein Plumbing Contractor

Specify Wolff Plumbing

For installations of any size or character. It is the best today as it has been for over 60 years.

L. Wolff Manufacturing Co.

General Office and Showroom
 111 N. Dearborn Street
 Chicago

MUELLER
 Pipeless Furnace

Guaranteed to heat every room in house to a comfortable temperature through one register. Easily installed, even in partial cellar. Saves one-third and more in fuel—burns any kind. Thousands in use. Write for free illustrated booklet and full information.

L. J. Mueller Furnace Co.
 218 Reed Street, Milwaukee, Wis.

Majestic Coal Chute

is easily installed in place of unsightly basement windows, or built into new foundations. It is absolutely burglar proof. The glass door can only be unlocked from the inside and gives ample light to the basement.

Inexpensive and durable—will outlast the building. It increases the value of property and is a modern building necessity.

Write for Catalog

THE MAJESTIC COMPANY
 800 Erie Street Huntington, Ind.

— HERO — PIPELESS FURNACE

the great coal saver, it is a money maker for the contractor and jobber. Stove heated houses are all prospects for sales because of the big fuel economy.

Easily installed by any good mechanic in a day. Here is a chance to build a good business with liberal profits. Big commission and exclusive territory. Write for bulletin.

HERO FURNACE CO. 59 W. Lake St.
 Chicago

Many a Contractor is Richer and More Popular thru Specifying

Andrews Hot-Water Heating



Andrews special, built-to-fit the - job, ready to screw together heating systems are in use in over 2200 cities and towns of this country. Best material and Andrews famous steel boilers. Save fuel. Get our estimate and special contractors' proposition.

ANDREWS HEATING COMP. NY
 1520 Heating Bdg. Minneapolis, Minn.



**BIG
BOOK
FREE**

Records and Systems of Filing

(Continued from page 44)

Thru my record system I can tell just how each job is progressing. If I see that we are spending too much time on one job, so that the labor charge is going to eat up all the profit, I can call in the foreman and put the proposition up to him and see if he can't push things along a little faster. I offer the foremen a bonus of 50 per cent of the saving they can effect on any contract. This can be done thru eliminating waste in material and by completing the job ahead of schedule time, thereby effecting a savings in labor charge. As I purchase all material, no saving can be made by foreman thru using cheaper material. In the contracting business, as in almost all other kinds of business, QUALITY is the biggest element in one's success, and I cannot afford to sacrifice quality in order to effect a little more profit. All work is daily inspected to see that workmanship of inferior quality is not injected in the job.

The remaining card index drawer is used as my

office tickler, or my "Brain Box," as I sometimes call it. This drawer is provided with monthly and daily guide cards. When any matter arises which should receive my attention at some future time I make a note of it and slip the note in this tickler behind the date I wish this matter brought to my attention. I can leave my work at night, free and unshackled, knowing that my system will bring my duties before me the next morning, the next week or the next month. A man's brain has a capacity limit, and I have found that it does not pay to overload it with details that wear and tear. Nor is it necessary to do so. If I have promised to have a bid in on such and such a date, and do not have the time at the time to figure I make a note of it and slip the note in my tickler several days in advance of the date it has to be in, and forget it. When that day comes my tickler brings this matter to my attention in plenty of time to get in my bid.

I could not do without my system now that I have it. I feel it has enabled me to enlarge my profits and cut overhead and to eliminate waste. I can lay my hand upon any particular thing I wish without any loss of time or patience.

Running Water and Electric Light

You Can Have Either or Both in your village or country home, no matter how far you may be from a central pumping plant. The Milwaukee Air Power Water System delivers fresh water from well, lake or spring direct to any part of house or yard. Saves all carrying—all inconvenience. Just turn a faucet and you get fresh, running water just as in a city home. No water storage tank to freeze or foul the water.

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suggest the advantages of running water and take the order, yourself—the plumber then makes the installation. The low cost of a

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—the "cent or two a day" cost of operation, and the automatic "self-operating" features make the Marvel the ideal system for the home.

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WITTE Engines

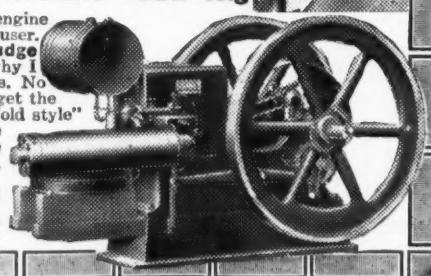
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are all made in the largest exclusive engine factory in the world dealing direct with user. My Free Factory Book, "How To Judge Engines", tells the whole story—tells why I can make a better engine and sell it for less. No need to pay higher prices than I ask to get the kind of an engine you want, or accept an "old style" or "back-number" to save money. Write for my new illustrated factory book and see just what a big offer I am able to make.

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Johnson's Radiator Cement contains no powders, cement or anything which can coat or clog the cooling system, and is absolutely harmless in every respect. It will ordinarily seal a leak in from two to ten minutes.

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If your dealer cannot supply you, use attached coupon.

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I enclose \$1.00 for which please send me, all charges prepaid, a pint of Johnson's Radiator Cement. Also send me, free your booklet on "Keeping Your Car Young".

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Address

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My Dealer is



How to Use the Steel Square

(Continued from page 61)

Have you not seen blocks or shingles under the seat cut to raise the rafter up in plane with that of the common rafter? Where they happen to be too high, the roof is lost because they were cut down by the rule o' thumb!

Now, Mr. Carpenter, haven't you done that very thing yourself?

The trouble lies in not knowing just where to place the square on the side of the rafter, so as to make the measurement come right on the measurement line along the center of its back. If there was no pitch at all, then the whole surface would be one plane or a common level; but as the roof begins to rise the different sides are represented by their portion of the roof in a plane of its own. The dividing lines are at the center of the backs of the hips and valleys, which when strictly adhered to requires the edges of the hip to be beveled off and the back of the valley to be beveled into the center, making its back a V-shape; thus the measurement line, when the valley rafter is to be backed, is actually in the wood, making the problem all the more complicated to arrive at

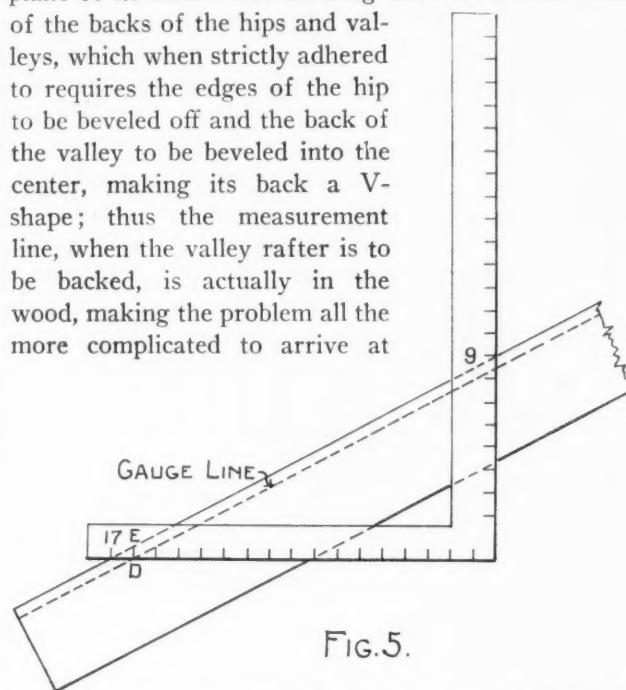


FIG. 5.

from the outer surface of the rafter. The steeper the roof the greater or more pronounced the backing will be; and consequently the error if not understood by the framer, in making the proper allowance.

Figure 4 shows how the cuts should be under different conditions.

Beginning with the plan of the rafter, the V lines represent the corner for either a hip or valley to rest on.

The vertical dotted line at B represents the corner in either case, the measurement point being directly above that point. The sections 1-2-3-4 represent the position of the rafters under the following conditions:

No. 1, the hip when not backed; No. 2, the hip when backed; No. 3, the valley when not backed; No. 4, the valley when backed.

From this it will be seen that No. 1 sits lower than the others. By tracing the bottom line of the sections down to the seat thence up to the second elevation, you

(Continued to page 120)

The PURITY JUNIOR

*Odorless
Waterless
Germ-Proof*

Operated by chemicals that decompose all sewage, killing all bacteria and rendering the contents of the container absolutely sterile. The Purity Junior is perfectly constructed and very simple in operation. It can be installed in any room, closet, or basement. Fittings are white enameled, giving them a very handsome appearance.

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or locker, finished in snow-white, baked everlasting enamel, inside and out. Beautiful beveled mirror door. Nickel plate brass trimmings. Steel or glass shelves.

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RO-SAN Indoor Closet

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Write for details of this exclusive agency offer. Send postal now before somebody else gets your territory.

Comfort Chemical Closet Co.
301 Factory Bldg. TOLEDO, OHIO



How to Use the Steel Square

(Continued from page 118)

will see just how deep the seat-cut should be for each rafter. No. 1 cuts into the C vertical line from the plan, which would make it stand at the right height above the edge of the plate; but in order to make the seat-cut clear the corner of the plate, it is necessary to cut into the vertical lines as at B. No. 2 cuts into the same points as No. 1, but owing to its being backed, the seat cut drops accordingly.

No. 3 cuts into the vertical line at B and in order to clear the edges of the plate, must cut out at the sides to the A vertical line.

No. 4 cuts in the same as the latter, but as much lower than No. 3 as No. 2 is below No. 1.

The distance apart of the outer vertical lines A and C from the plan represents the width of the rafter. Therefore, if the rafter be 2 inches thick, the lines A-B-C would be 1 inch apart and 1 inch set off along the seat cut or a line parallel with it will give the gauge point on the side of the rafter. To make this clearer, see Fig. 5; 17 and 9 give the seat-cut. Now measure back along this line 1 inch from the edge of the rafter which will represent one-half the hip's thickness; this will locate the gauge point for the line from which to remove the wood back to the center line of the hip. The distance E-D shows how far apart the parallel or seat lines should be under the above conditions. This applies to any pitch given the roof, so long as

the pitches are regular.

The backing of the hip can be reckoned from the miter of the corner on which the hip rests, because it partakes of the same portion as used on the steel square for obtaining the miter and is as follows:

For the square corner, 12 and 12 give the miter, which everybody knows. Now let one of the twelfths represent one-half of the thickness of the hip and set off a like amount along the seat cut line, as before described in Fig. 5.

For the octagon 5 and $\frac{1}{2}$ give the miter; then set off $\frac{5}{12}$ of half its thickness.

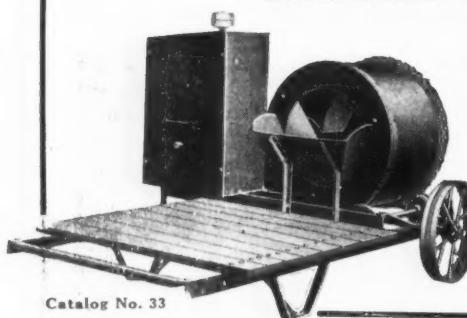
Seven and 12 give the hexagon miter (approximate) and $\frac{7}{12}$ will be the amount to set off. These figures remain the same regardless of the pitch given the roof, provided it is regular.

Going back to the square cornered roof, let us illustrate this point another way. Suppose the seat-cut is a square cut, then the hip would stand straight up like a corner post, yet the figures as given above would be the proper amount to set off to make the backing conform to the angle of the corner on which the post rests. It is the swing of the seat cut towards the upper edge of the rafter that governs the gauge line on the side of the rafter; and as the pitch is lowered, the nearer the seat line approaches the back or edge of the rafter; and finally when the rafter is clear down, the seat line has disappeared. There are other ways of arriving at

(Continued to page 122)

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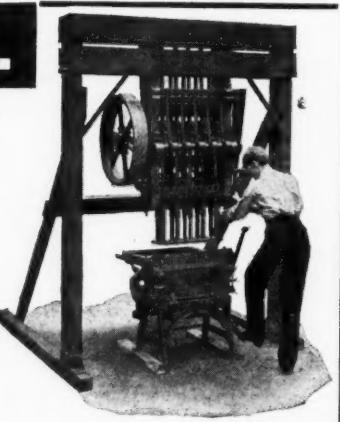
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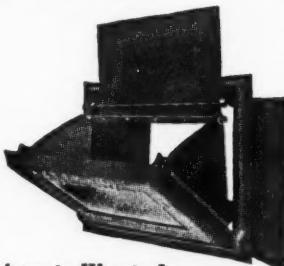
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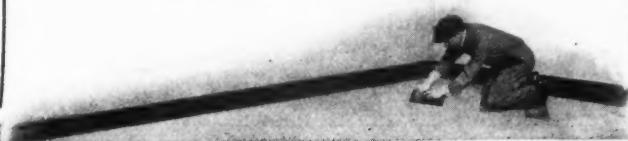
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Kewanee Electric Light, Running Water and Sewage Disposal Systems all give the kind of service that means bigger business for you. They are built *right*—cannot get out of order. There is a Kewanee System to meet the needs of every building—a Kewanee System to satisfy most completely the needs of every client.

Write for the cooperation of our drafting and engineering departments and for free bulletins on Water Supply, Sewage Disposal, Systems and Electric Lighting Plants.



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Make Your Own Brick

and
\$20 to \$50
Extra Daily Profit

10000 Brick
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Be independent of the clay brickmaker and dealer. Put yourself in a position to make more money on your contracts, to take bigger jobs—more profitable jobs without worry of delays or lost time eating into your profits. With a Helm Press you can make 10,000 Brick or 1,000 Blocks a day—\$20 to \$50 daily profit. Operates under 80,000 pound pressure. No tamping—no burning—every brick or block perfectly true. A big demand in your own community for this superior kind of building material. Equip yourself to supply it.

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Appeals to builders, contractors and architects. It overcomes the opposition to concrete because it offers absolutely Dry Wall construction. It saves money for builders, as no furring and lathing are required, and it makes rigid walls and fireproof walls. This is the system which is bound to get you business and give you the advantage over all other products.

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THEY are Folding, making them very compact when not in use. They are light and exceptionally strong.

They meet every demand of the contractor, and because of the ease and the rapidity with which they can be erected, they are the most valuable asset.

No board removing or hole boring—erected with four 10-penny nails. Ten days' Free Trial will convince you that you have been wasting time. Write for Catalog.

ELITE MANUFACTURING CO.
ASHLAND, OHIO



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

How to Use the Steel Square

(Continued from page 120)

the above results, but it matters not what figures or diagrams are used, they are all based on circular measurement, or the divisions of the circle.



How to Make a "Convertible" Table

(Continued from page 40)

similar to that shown and locate same as shown on Half View. Also fit a desk lock in fall board to lock into stay strip. Furnish lock with lemon brass escutcheon of plain design.

Desk top is to be fitted into runners so it slides smoothly. The front edge of desk top serves as a stop for the fall board, therefore the width of desk top must be governed accordingly. See enlarged Section at A-A. Furnish desk top with two brass knobs of kind as shown on drawing.

The partition pieces for pigeon holes are fitted together in such manner as shown on Detail at F. All parts are to be well nailed together with small brads. The pigeon holes may be secured to table with small screws or brads.

Cut to size and fit drawer front in space it is to occupy. Groove or rabbit, as required, the pieces for the drawer. See Drawer Details. Parts may be nailed together with small brads. Supply drawer front with brass knob as shown.

Before finishing, clean up all surfaces with No. 00 sandpaper where necessary and remove all surplus glue, as the stain will not take over glue.

All exposed inside surfaces should be finished the same as the outside of table, except the pigeon holes, which may be stained only, the staining being done before the pieces are nailed together.

The finish will depend upon the kind of wood you have used. If oak has been used, one coat of "fumed oak" acid stain, one coat of brown shellac and two coats of flat varnish makes a desirable finish. Sandpaper lightly between coats with worn sandpaper of No. 00 grade.

If Quarter-sawed White Oak is used, I especially recommend either of two fumed finishes manufactured by the.....which they call Trim Effect No. 10735 and Trim Effect No. 11178. Prices and sample panels of these finishes may be obtained from the manufacturers or possibly from your local store.

To complete table, supply same with wooden wheel casters or "slides" as desired.



Improved Southern Construction

(Continued from page 31)

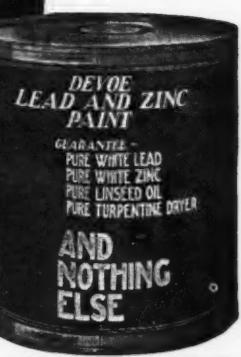
stuffiness in hot weather.

Window sash need only be a grooved frame into which to insert the glass. The lattice window, hinged, may be simply and cheaply constructed here instead of

(Continued to page 124)

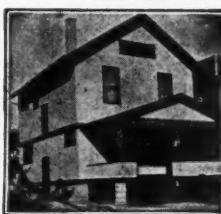
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Guaranteed
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KRAGSTONE STUCCO



Remodel with Stucco

ALL kinds of new construction, as well as remodeling work can be easily done with Kragstone Stucco. Many contractors are keeping busy and earning good money.

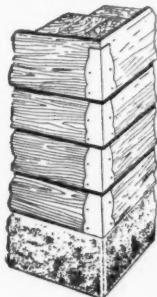
Kragstone can be applied over any surface or lath. 300% stronger than cement stucco. Used in zero weather without freezing. No checking or cracking.

New book ready. Tells all about Kragstone. Write for prices and specifications.

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Neat Corners Made Quickly KEES Metal Building Corners



will enable even inexperienced workmen to make perfect "mitred" corners quickly. Pierced ready for nailing, they save beveling expense, fit any corner and are practically invisible when painted. Made of heavy galvanized iron, they form a neat, indestructible and weatherproof corner.

Kees Metallic Batten Strips

will make your buildings rain, rot and vermin-proof. They allow for contraction of siding, will never warp and make snug, permanent and weather-tight joints.

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Half the paint—
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Weatherwax

You can apply Weatherwax in winter. Snow or rain won't cause fresh coats to pit or run. Dries quicker, spreads twice as fast and twice as far as best linseed oil paints. Slaps on like white wash—or sprays on. Fewer coats needed. Leaves a flat, waxy surface without brush marks.

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These materials are so much cheaper than wall paper and oil paints, and are so much better than lime wash that every wide-awake builder and owner should investigate them fully, learn which are the most practical, and find out how much they will help to reduce costs.

Calcimines are glutinous compositions intended for decorating ceilings and walls of residences, offices, schools, churches, theatres. The best are called MURALITE and CALCITINE.

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Our products are more practical than any similar ones on the market, and are sure to please you.

Send for descriptive cards and prices
M. EWING FOX COMPANY
Manufacturers

240 East 136th St. 1501 So. Peoria St.
NEW YORK CHICAGO, ILL.

Improved Southern Construction

(Continued from page 122)

so many cumbersome box frames. That is because the workings of ice do not have to be considered.

Instead of halls and vestibules wide doors should open directly onto a veranda.

Instead of a cumbersome roof and tight attic, a construction should be devised that will admit the free circulation of air between roof and ceiling, such as designed in the cottage herewith.

The free circulation of air between ceiling and roof dries the atmosphere so that it does not have an oppressive effect on the rooms below. In addition, projecting eaves should shade the sides from the sun, and the windows as well. Then the outside wall need only be one thickness of material.

A light building has greater need of bracing than a heavy one, and all ends should butt into notches, as any other method—no matter how firm at first—will vibrate loose under action of the wind.

The decorative use of cement, shingles and stone is sure to be well set off by the close proximity of vines and shrubs. Porches, arbors and seats need no other adornments. Space between houses, and a yard with trellises are more necessary than in northern suburbs.

It leads to healthier living to consider what portion of the housekeeping may be done outside, and to provide a retired nook for it. This saves in regard to the

main building expense, but increases the surrounding details.

Moments of sociability or rest can be enjoyed on a well screened front porch. It should open directly into the living room thru double doors where reading and sewing materials are handy.

The bedroom with a small glass window can be under the porch roof, but one side should open out with hinged board flaps so as to shade the top and drop down from the sills. This large opening should have a cloth screen stretched tightly on its frame. Both gauze and bunting are used for this. The prospect seen from the back of the room looks like a half-tone picture, and at times may rival many an expensive landscape painting in suggestion and beauty.

A fireplace is desirable in the living room, especially where wood is easily obtained for fuel. While the opening may be wide enough for fuel in one corner and the blaze in the other, the height should not be more than 30 or 32 inches, as much smoke is generated.

A small cook room, where everything may be reached with hardly any steps, is decidedly labor-saving and practical where the heavy work, like the washing, can be done on the back porch or a platform outside.

A back porch having shelves is desirable, as it will save repeated chasing into the house and out after many articles of daily use.

(Continued to page 126)



Reproduced from a contemporaneous wood cut

The great Chicago Fire of '71 began among small wooden houses. Property loss two hundred million dollars.



Photo copyright 1917 by International Film Service

The Atlanta Fire in 1917 started in the flimsy structures of the negro section. Property loss ten million dollars

The Best Fire Insurance is Fire-resistant Construction

Great destructive fires BEGIN in districts that offer abundant fuel—no resistance.

BERGER'S EXPANDED METAL LATH

adds greatly to the fire-resistance of any form of construction in which lath is to be used. Ask for Catalog F-3.

THE BERGER MFG. CO.

BRANCHES: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco
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CANTON, OHIO





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The United States government has accepted the "STAR" type ventilator as a standard. The "STAR" assures GOOD VENTILATION—there are now one million in use.

They are designed to expel the air from the inside and circulate fresh air. They can also serve doubly—as skylight and as ventilator.

They are made with regulation bases for installation anywhere.

We are also manufacturers of "ALMETL" Fire Doors, High Grade Roofing Tin, Metal Tiles and Metal Shingles.

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Now that building operations are being resumed on a scale even greater than before the war, the production of "GLOBE" Ventilators is being put on a greatly enlarged basis to care for the ever increasing demand.

We suggest that you write for our latest Catalog and Price List unless you now have complete information on file. Please address Department F.

GLOBE VENTILATOR CO.
TROY, N. Y.

"FOR EVERY TYPE OF BUILDING
UNDER THE SUN"





EQUIP YOUR BARN FOR BIGGER PROFITS

INSTALL

BUCKEYE BARN EQUIPMENT

Now is the time to make every effort for *increased production*—increase the food supply—eliminate all extra labor! You can help accomplish all these things if you install

BUCKEYE BARN EQUIPMENT

Clean, comfortable stalls for the cows will net *big returns* in *increased milk flow* while hours of time and labor will be done away with if you install this wonderfully simple and easily put up equipment. Write to-day. A postal brings you free catalogs.

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Furnish The Best

The farmer knows that contented cows insure bigger profits; they give more and better milk when housed in comfortable ventilated barns.

Badger Cupolas

satisfy because they do what a cupola should do—ventilate. They're strong, handsome, durable and highly efficient. Light in weight and shipped complete ready to erect. No need to build framing of any kind. Made of high grade galvanized steel—rain, rust and snow-proof. Screened to exclude birds.

Write for free catalog and prices.

Badger Corrugating Co.
La Crosse, Wis.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Recommend O K Cupolas

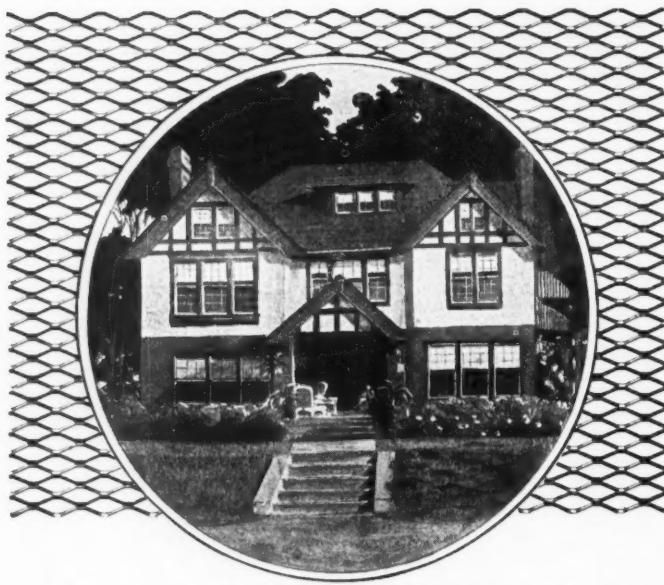
If you want to make more profit—build your reputation and good will, equip the barns you build with O K Cupolas.

O K Cupolas solve the barn ventilation problem. They sell themselves. Are made of heavy galvanized steel; bird, storm, rot and rust proof. Neat in appearance. Are easy to erect—shipped ready to install. Every one you put on adds to your reputation.

Special prices to builders and contractors where we are not represented. Write for full particulars.



Phillip Bernard Co.
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A Suggestion to Contractors and Dealers

WITHIN your own neighborhood there are doubtless quite a few frame houses in need of repair. If the owners knew how sensibly and economically they could make them like new with a stucco over-coating, many would do so. If you will show these people how this can be done with Sykes Lath, you will develop a very profitable business for yourself. We will be glad to co-operate with you.

Write us for free sample and specification book.

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Canton's New Million Dollar High School. Built with Berger's Metal Lumber. Architect, Geo. F. Hammond.

Not Without Honor in Its Own City

Canton has grown rapidly in the last decade. Berger has contributed to this growth through its own development and also by supplying Metal Lumber for many of Canton's structures.

Write for Bulletin L-3

THE BERGER MFG. CO., Canton, Ohio



BERGER

Metal Lumber



Improved Southern Construction

(Continued from page 124)

A screen with settee and work table will secure convenience and seclusion for these operations.

By this it will be seen that Southern housekeeping should be airy and in hot weather be adaptable to what city people call light housekeeping.

A closet for garden tools under the house is necessary, and a pit in the ground desirable for a cool room.

Notice that nothing so belittles a small house as a little mite of a chimney above the roof. Spread it out large. A good sized flue top will draw better and is needed for wood fires.

Be sure to make chicken houses, wagon shed and other out buildings a part of the design. It dignifies a small cottage. Accomplish this, not by attaching them to the dwelling, but by disposing symmetrically and devising some detail to match throughout.

Advise the owner, instead of scattering the outbuildings all over the place arrange a three-sided court with the house or have central passageway from it. Consider probable buildings to come. Keep out of the never-ready class.

Even if you are not a gardener, be particular to have a natural growth of trees close to the house. See where additional shrubs will help in a picturesque appearance. They clear the atmosphere, equalize the temperature and humidity. They do not attract lightning, but are conductors, protecting the house that otherwise becomes the only vehicle when standing alone in a clearing. Insurance records prove it.

Remember it is not the business of the homestead owner to buy everything, but instead to make use of his own resources as far as possible. Help him in that respect; it is his talent.

Perhaps there are some natural tree trunks on his place that can be culled from his groves for the porch columns. Do not be afraid of a little rustic work. It makes an artistic gradation from the garden flowers to the nicer carpentry work of the cottage.

Thoughtless people often destroy good value on their own property. It is easy to destroy, hard to replace. Give every chance the benefit of the doubt. Consider what others might desire; in that way a property makes friends. Anticipate the good taste of others; it increases one's own talent and makes way for the approval of more friends to come. Even a house may be expected to bear fruit.

The diagrams herewith show how the light summer cottage may be constructed of the most easily obtainable type of boards. It is the skeleton system of construction that extends thru all kinds of buildings, from cottage to high office building.

In building up posts and beams from small pieces the unnecessary bulk is cut out, eliminating those parts that are cumbersome instead of strength-giving. That makes more material for real service. It is a principle worth adhering to.

Go Carefully Into the Comparative Cost of Sheldon's Slates and Artificial Roofings

You will find that you can have an attractive roof of

SHELDON'S SLATES

at the cost of a flimsy artificial roof. And the first cost will be the only cost—there will be no renewing, repairing or repainting.

Ask for Interesting Booklet "The Roof of Eternal Youth" Fully Describing Sheldon's Slates.

Roofers: You can make money laying Sheldon's Slates. Write.

F. C. Sheldon Slate Company
Granville, N. Y.



From Quarry To You

with the greatest speed and safety. Use G. F. T. Roofing slate. First cost the last cost. No risks. Nature's own roofing. It is not an experiment. Fire, storms, snow, rust, etc., cannot damage Genuine Franklin Tunnel roofing. Write for catalog.

SLATINGTON SLATE CO., SLATINGTON.



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"SLATES OF QUALITY"

MOTTLED GREEN AND PURPLE - WEATHERING GREEN
UNFADING GREEN - MAMMOTH VEIN POULTNEY SEA GREEN
GENUINE BANGOR FROM OUR CELEBRATED BANGOR UNION QUARRY

BLACKBOARDS - STRUCTURAL SLATE
SLATER'S TOOLS - MACHINES & SUPPLIES

We furnish "SLATES OF QUALITY" in random widths, graduated thicknesses and in one or varied colors; SEE SWEET'S CATALOGUE.

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ESTABLISHED 1870.

We publish a handy book
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When Urgently Needed**

RECORD breaking slate orders from the Government, for Industrial Housing requirements, put our service to the test. Not once did we fail to make prompt shipment.

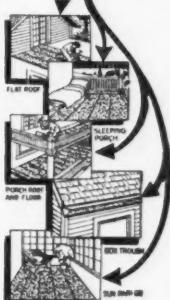
Our forty quarries are again at your disposal for private building operations—and you may enjoy the same prompt service.

Slate has long been recognized as possessing all the advantages of all other roofing materials, but none of the disadvantages.

Forty Quarries At Your Service

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INCORPORATED
BANGOR, PENNSYLVANIA
Largest Shippers of Roofing Slate in the World

Where CONCRETE
Should be Used



**Economical
Serviceable
Artistic and
Profitable**

The ideal material to use wherever a flat surface is to be covered or where the pitch is less than 4" to the foot.

Cost very little.

Is easy and inexpensive to lay.

Makes a neat, smooth, durable surface.

Will not leak, rot, stretch or shrink.

Send for booklet "Roofing Facts and Figures"

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Chicago Distributor:

GEO. B. CARPENTER & CO., Wells and Michigan Streets

California Distributor:

WATERHOUSE-WILCOX CO., San Francisco—Los Angeles

City Comforts for Farm Homes

(Continued from page 48)

septic tank (Fig. 3) differs from the single chamber tank in having a second chamber (known as a dosing chamber) from which the liquid is discharged thru a siphon at regular intervals. The advantage of the dosing chamber is that it discharges several hours' accumulation of sewage in a single forcible flow and carries it to the furthermost part of the disposal system and permits aeration of the system between discharges.

Single chamber tanks, under certain conditions, discharge so slowly that the liquid seeps into the ground at one point, near the upper end of the disposal field and tends to create a nuisance at that point. This difficulty led to the invention of the dosing chamber. (See also Diversion Chamber.)

To convert the single chamber brick tank into a double chamber tank, in accordance with Fig. 3, add a dosing chamber, also of brick, 15 inches deep below flow line, 3 feet wide and 4½ feet long. A patented siphon is fitted in the bottom and there is also an overflow system as shown in the design.

The siphon works in this manner:

When the tank is emptied, air naturally accumulates under the bell. The rising sewage imprisons the air and forces it down into the U-shaped portion of the siphon. As the sewage increases in depth, the pressure in the tube increases and at length the air is all forced into the ascending side of the tube. As

soon as the liquid can pass the U-bend, a general discharge commences thru siphonic action and the tank is emptied.

Capacity of Dosing Chamber.—The proper capacity for the dosing chamber varies with the size of the disposal field and this in turn with the character of the soil and the number of inhabitants served. A good rule is to make your dosing chamber at least large enough to contain one-half of the capacity of the disposal pipes. A cubic foot of water will fill about 13 feet of 4 inch pipe, so count upon a cubic foot of dosing chamber capacity for every 26 feet of pipe.

Capacity can only be increased laterally, not by making the dosing chamber deeper, as the siphon will discharge when the liquid is about 15 inches deep and this dimension can be considered as fixed.

A good way to increase capacity, without increasing the amount of brick work is to lay a lateral line of eight or ten inch vitrified pipe to one side of the chamber and close the farther end. The length of the line can be adjusted to secure the desired capacity and the pipes are out of sight.

Vitrified Pipe Septic Tank.—An excellent and lasting tank of vitrified clay pipe can be constructed in accordance with Fig. 4. This consists of two columns of 30 inch pipe, connected by a diagonal ascender of 6 inch pipe. This tank must be classed as a single

(Continued to page 130)

Lasting Beauty in Church Ceilings

There is a sure way to prevent stains and cracks, danger and unsightliness in the ceilings of church buildings.

It is simply to install the accurate reproductions in steel of beautiful molded plaster which we call



They are suitable for all types of new churches and they can be installed in older structures right over the ruined surfaces.

"Classik" Steel Ceilings are unsurpassed in beauty, sharpness of detail, and mechanical perfection.

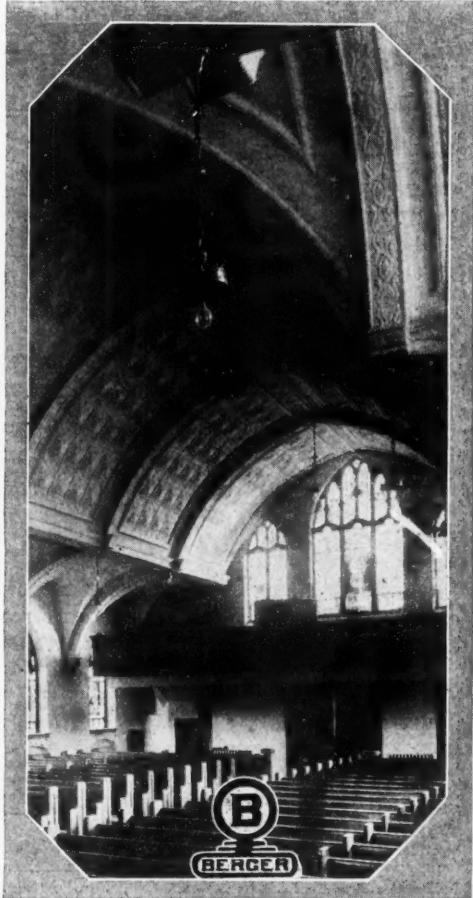
They are made in a wide variety of correct "period" designs, suitable for all types of buildings in which beautiful and permanent ceilings are desirable.

See Sweet's and ask for design Catalog D-3

The Berger Mfg. Co., Canton, Ohio

Branches: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco

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BAYONNE

ROOF AND DECK
CLOTH

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Roof and Deck Cloth

BAYONNE is specified by leading architects because it has proved to be the ideal covering for low-pitch or flat roofs, verandas, sleeping porches, sun parlors, conservatories and all floors exposed to the weather or to constant wear.

The Chas. DeJong Building Company, of Paterson, N. J., writes: "We have been using Bayonne for the last four years, and recommend it most highly, as it has proved satisfactory in every instance."

Bayonne outwears other materials of its kind, is laid on dry boards (an easy and inexpensive job), and is painted afterwards—any color desired. It is absolutely water-proof, cannot crack or buckle, and fits perfectly into nooks and corners. It is kept clean by sluicing with water. A Bayonne Roof or Deck never leaks.

Our Free Sample Book "N" shows texture and gives prices and directions for laying. Write for it today.

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St. Louis Branch—202-204 Market Street

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Guaranteed
Ventilating
Systems
for Barns and
Creameries

take out the excessive moisture and foul air and bring in the fresh air. This prevents rust of equipment and rot of fodder and material. They bring sanitary conditions to a creamery, preventing rust, rot and rheumatism.

"Milcor" Ventilators are scientifically constructed, very strong and an ornament to any building.

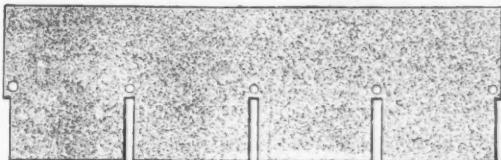
Milwaukee Corrugating Co.
Milwaukee, Wisconsin
Branch at Kansas City, Mo.



All-Steel Base, Aluminum Finish

"STRIP CITY"

If the total number of REX STRIP SHINGLES we manufactured and sold last year were used in a single community a good size city could be built. Let us call this place "Strip City." The residents would have no roof worries or repair bills because REX STRIP SHINGLES are guaranteed for ten years. No danger from flying brands or sparks. The roofs would all be attractive—some red, others green—and for those who wished something out of the ordinary, mottled. With the fire hazard reduced to a minimum the insurance rates would be lower than in cities having inflammable roofs. Sounds like a rather attractive place to live in, doesn't it?



Of course "Strip City" does not exist, but you can have a roof of REX STRIP SHINGLES either over your present wooden roof or on that new home you have been planning to build after the war. You will find them cheaper to apply than individual shingles.

Send for Catalogue No. 20 descriptive of REX STRIP SHINGLES and other Rex Products

THE FLINTKOTE COMPANY
90 Pearl Street, BOSTON
NEW YORK CHICAGO NEW ORLEANS

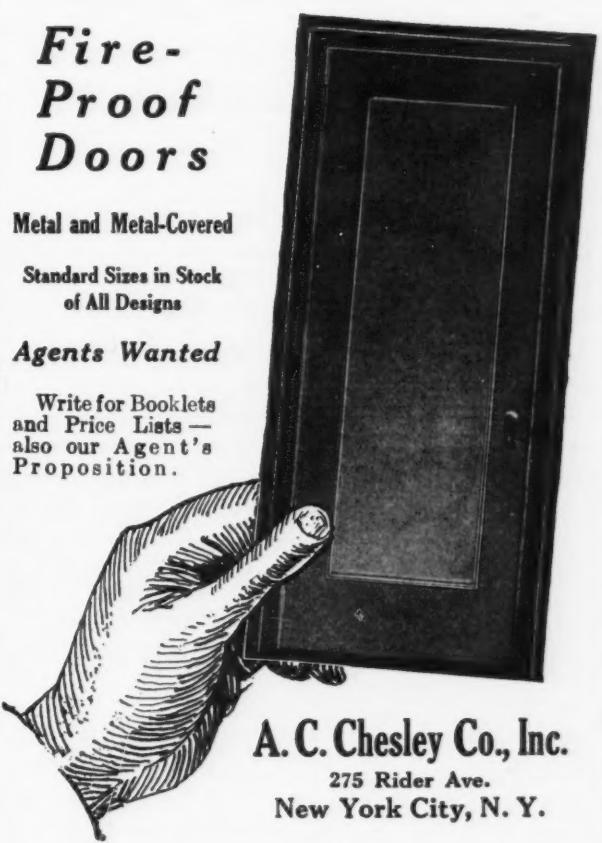
Fire- Proof Doors

Metal and Metal-Covered

Standard Sizes in Stock
of All Designs

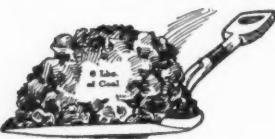
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Write for Booklets
and Price Lists—
also our Agent's
Proposition.



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Building Season Reopens Coal Saving a Necessity

Your customers waste six pounds of coal every winter's day. Allmetal Weatherstrip will positively stop this unnecessary waste and bring money to you. Agents all over United States and Canada are coining money.

Write for latest price list.

ALLMETAL WEATHERSTRIP CO.
230 W. MADISON ST., CHICAGO, ILL.

Carpenters Wanted as Special Representatives

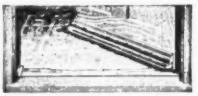
Carpenters and others are earning big money. Right in your line. Fenton, of Indiana, made 400 sales in one week; Woodward sold 47 the first day. Sell



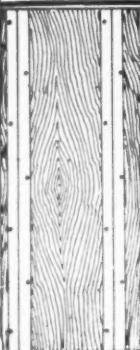
for bottom of doors and hinged windows. A perfect protection against cold, snow, rain, dust. Approved by architects, carpenters and builders wherever known. Now is the time to start.

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Making Plans

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WEATHERSTRIP CO.
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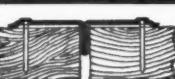


Wind-Proof—Rain-Proof—Rot-Proof Chief Galvanized Iron Barn Bats



Make your buildings tight. Chief Galvanized Steel Strips fill the cracks between boards and make strong, neat, weather-proof joints. Keep out vermin. Cannot rot, warp or split like wooden batten. Always fit. Allow for contraction and expansion of boards without loosening nails. Furnished in 6-7-8-9-10 ft. lengths with interlocking joints. Write for full information.

SHRAUGER & JOHNSON
430 Walnut St. :: Atlantic, Ia.



Shows end view of Chief Batten with joint closed. Siding expanded. Note position of the batten in the crack.



Shows end view of Batten with the joint open and siding contracted. Chief Battens automatically accommodate expansion and contraction.

City Comforts for Farm Houses

(Continued from page 128)

chamber tank, so far as action is concerned, as the second chamber is not a dosing chamber. The two chamber design helps the baffling action and promotes sedimentation. An ordinary dosing chamber can be added if desired.

The construction of the tank, as shown in Fig. 4, calls for six sections of 30 inch vitrified clay pipe, 30 inches in length, comprising two sections of plain 30 inch pipe, two sections with 6 inch Y branches and two sections with 8 inch T branches. Two 6 inch T's and two one foot bends are also required, beside several sections of plain 6 inch pipe.

Proper fitting of the diagonal connecting line requires that the two columns be placed approximately 4 feet apart.

The depth of the excavation and level of the column base depends upon the level of the inlet from the house sewer, as will be seen in the design. The bases are of cemented brick, 36 inches square, and the plain sections of 30 inch pipe are placed upon them and cemented into place with bevels of cement mortar, inside and outside the pipe.

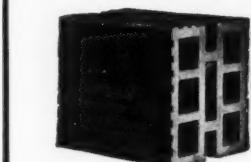
The rest of the structure, including inlet, diagonal ascender and outflow pipes should be assembled loosely before any more cementing is done, to assure a fit.

The two 30 inch pipes with Y branches should be placed above the 30 inch pipes already in place. Cement the two sections together, caulking the upturned bell joint with a small quantity of oakum or hemp and pouring cement grout into it, of the consistency of thin mush. The Y branch of the first column should be pointed at the center line of the second column and the Y branch of the second column pointed in the direction of the disposal field.

The 30 inch pipe containing the 8 inch T branches are next installed above the Y branch sections. Their position is reversed bringing the spigot upward and the bell end downward, to meet the bell of the middle section. The joining of the two bells necessitates a reinforcement in the form of a six inch strip of chicken wire, which is bent around the lower (or upturned) bell, before the upper section is placed. The two bells should also be blocked apart, slightly, to permit the cement mortar to penetrate the joint from both sides. Fill the interior of the two bells with cement mortar, troweling it smooth to conform with the inside diameter of the pipe.

The cementing of the outside of the joint is accomplished during back filling. When earth has been tamped around the pipe to the height of the lower side of the lower bell, build a mold of earth around the two bells and pour cement mortar into this mold to the height of the two joined bells and with a thickness of at least an inch.

(Continued to page 132)

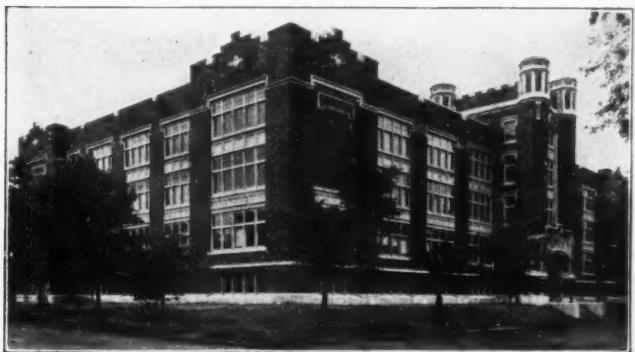


8½ x 10½ x 12
Pat. July 31st, 1917

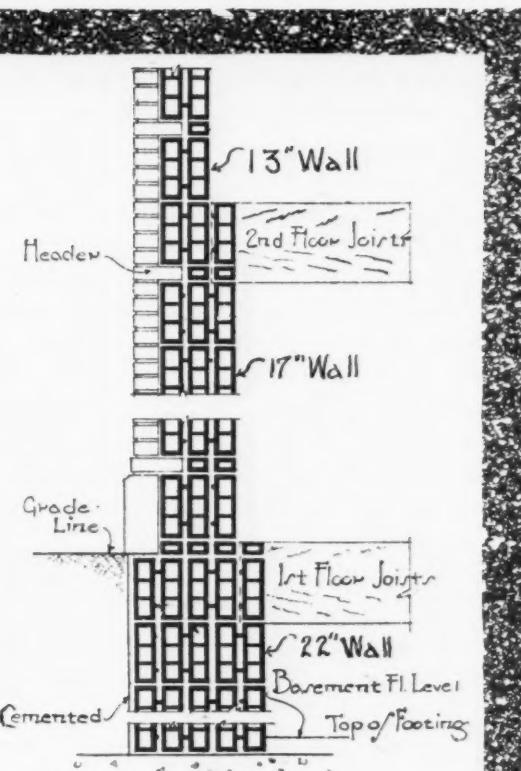
DENISON LOAD BEARING TILE

Strongest tile made—70,000 lbs. sq. ft. crushing strength—no structural steel required in wall construction—easy and quick to lay up—big saving over any other permanent building material.

Send for detail drawings and further information



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J. H. Felt & Co., Architects
Mason City, Iowa
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MASON CITY, IOWA

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Weather Strip can be sold every month in the year—in all kinds and conditions of buildings: private homes, stores, schools, hospitals, theaters, churches—they all need Weather Strip.

ANGELL Weather Strip is made in all standard sizes of windows and doors—Brass Thresholds, Spring Bronze, Felt Door Bottoms, Automatic Door Bottoms, planes for installing, and all other supplies.

We sell to the retailer; we do no installing ourselves.

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"Artfashioned" Brick should be used on your Industrial Housing Jobs. No Painting! No Repairs! Absolutely Permanent. Just as easy to use as frame.

"Nuvogue Artfashioned Brick" is made in many beautiful colors. A variety of textures for bungalow or mansion.

Your local dealer should carry "Nuvogue Artfashioned Brick" if not—tell us. Write for information.

Manufacturers of "Artfashioned Brick"

Boone Brick Tile & Paving Co.

Sales Offices all through the Middle West. Boone, Iowa

City Comforts for Farm Homes

(Continued from page 130)

The inlet consists of a 6 inch house drain passed thru an 8 inch T branch. This leaves a little intervening space which should be caulked with oakum and the joint cemented externally and internally.

The ascender consists of a 2 foot section of 6 inch pipe, also a short section from which the bell has been removed, a 45 degree curve and a horizontal 6 inch pipe passing thru the 8 inch T of the second column. This is treated as was the inlet joint.

The outlet is a second ascender, connecting with the line which leads to the disposal field. The level of the outflow can be adjusted by breaking the short section of pipe in the outflow ascender to any required length. The outflow should be 1 inch below the inlet.

The baffles are placed in position last of all. They consist of 6 inch pipes, connected to the inlets by T branches which direct the flow downward. To secure discharge below the scum, an additional section of pipe is joined below each T section. The two sections should be joined first outside the tank, by placing them in a vertical position, caulking the up-

turned bell of the lower section and filling it with joint material. The T's should then be joined to the inlets. Great care is advisable in this operation, as the joint is subjected to considerable strain from weight. Support the baffle from below during the setting of the joint.

By using more than two columns or by increasing the diameter or length of the pipes used, it is possible to increase the capacity of the vitrified pipe septic tank. A person capable of constructing this tank can readily adapt the design to such altered dimensions.

Vitrified Pipe Disposal Field.—From the septic tank, unless the conditions are suitable for the use of a water course or leaching cesspool as described above, the liquid overflow should be discharged thru a tight sewer of vitrified clay pipe for any convenient distance, and terminating in a disposal field or absorption system consisting of several lines of four inch vitrified clay pipe, laid just under the surface.

The location for the disposal field should be carefully selected. It should be enough lower than the

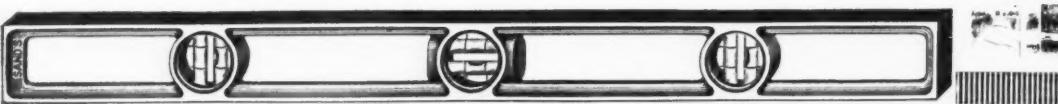
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Sand's Aluminum Levels

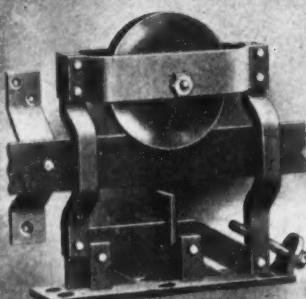
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The standard of accuracy. And not only the most accurate—but easiest to read, even in the dark. Never rusts—cannot warp, split or crack—and are easily handled. The highest levels made—strong and durable because the greatest strength is placed where most needed. Ask your dealer to show you these levels, and also write for our new circulars showing full size levels.

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AT ALL HARDWARE STORES

Manufactured by

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Meadows

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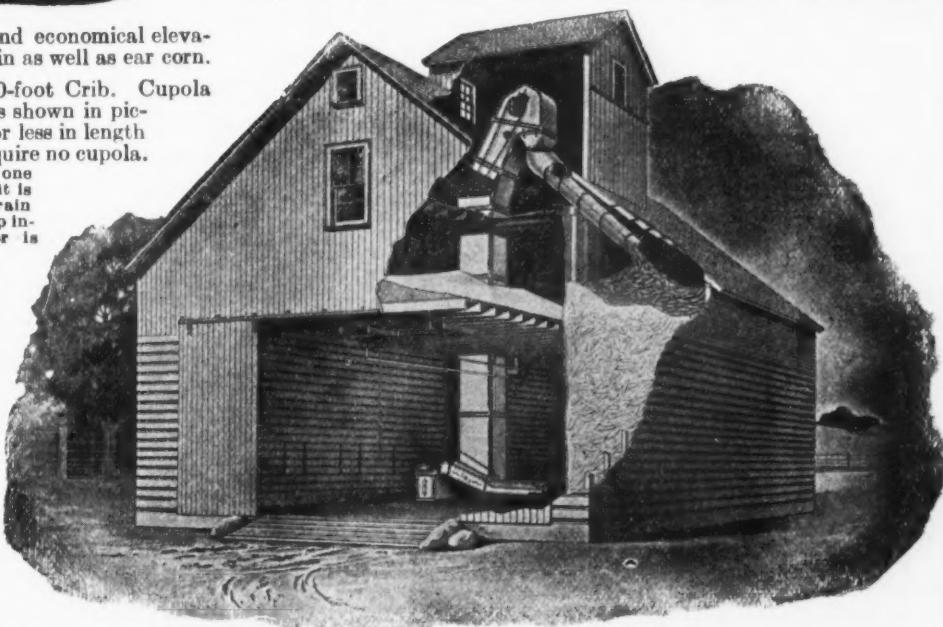
Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing Meadows Inside Stationary Cup Elevators.

The most convenient and economical elevators, carrying small grain as well as ear corn.

The picture shows a 40-foot Crib. Cupola need not be as large as shown in picture; the cribs 36 feet or less in length with half-pitch roofs require no cupola.

Elevator is confined to one side of driveway. No pit is necessary for dumping grain just a hole 16 inches deep into which boot of elevator is set. The wagon jack is entirely overhead, fastened to the joints.

But write in today for our free Crib and Granary plans catalogs and large posters telling all about our outfitts and their application. Valuable information for the builder, and writing for it obligates you in no way.



Meadows
Mfg. Co.

Pontiac, Illinois

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This is a business as big as your ambition for success.

Automobile Tire Surgery during the war was a factor in solving the Tire problem, in helping to keep automobiles going, aiding to meet the shortage of rubber and the high cost of tires. There will be a greater demand for Automobile Tire Surgery than ever—with the starting again of the manufacture of automobiles, and with more automobiles put into use—

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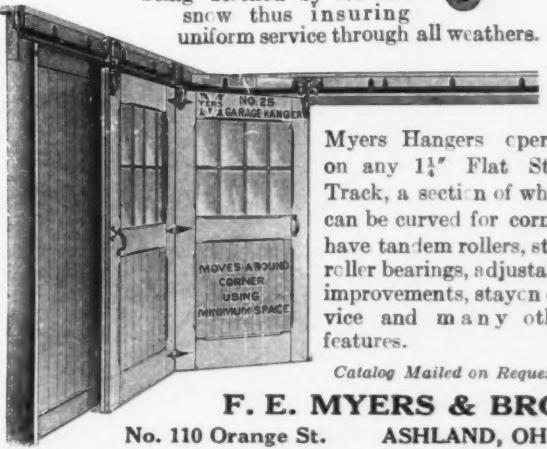
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IDEAL sliding doors for garages and other buildings become a reality when Myers High Angle Garage Door Hangers are used for these hangers operate on track installed on inside of building which protects them from the weather and prevents the doors being blocked by ice and snow thus insuring uniform service through all weathers.



Myers Hangers operate on any 1 1/4" Flat Steel Track, a section of which can be curved for corner, have tandem rollers, steel roller bearings, adjustable improvements, stay-in device and many other features.

Catalog Mailed on Request.

F. E. MYERS & BRO.
No. 110 Orange St. ASHLAND, OHIO

City Comforts for Farm Homes

(Continued from page 132)

outlet of the tank to permit a fall of at least 6 inches per 100 feet for the sewer, which latter should be laid with cemented joints. Then the field itself should be fairly level though not low and wet. The soil should be preferably a gravel or sandy loam below a few inches of top soil. A meadow or pasture often makes a good location. The vicinity of a well or elevated ground draining toward a well should be avoided. Also trees which send out long roots may clog the pipes if too near.

For a family of six there should be from 200 to 400 feet of pipe in the system, depending on the porosity of the soil. The design of the field may be in the pattern of a fork as shown in the cut or may be laid to fit the slight slope of the ground. The pipe should be laid almost level, sloping not more than one inch in 100 feet. Adjacent rows of pipe should be at least 15 feet apart and not over two feet below the surface, as soil bacteria assist the purification process greatly.

All lines in the system should of course be connected directly to the end of the discharge pipe from the tank. They should be laid, however, with open joints and with the bells of pipe "down stream," in order to assist the liquid in seeping out into the soil. The joints should be laid loosely and it is well to place a strip of burlap or tar paper over the top

of each joint to keep fine material from washing or falling into the pipe. The joints should be surrounded with a 4 to 6 inch porous material such as gravel or cinders.

Vitrified pipe, being non-porous, is especially adapted to use in the disposal field as frost will not affect it.

If the absorption system tends to produce an over-moist condition of the soil, lay vitrified drain pipes midway between the parallel lines of absorption tiles and slightly lower. Conduct the drain to some regular drainage outlet and you have an ideal installation for the final disposal of sewage.

Diversion or Gate Chamber.—If a single chamber tank is used, it is advisable to build a diversion chamber at the point where the sewer from the septic tank connects with the disposal field. (See Fig. 5.) This enables the owner to direct the flow of sewage alternately to different portions of the field, giving one portion a "rest." Such an arrangement is not a complete substitute for a dosing chamber, but greatly promotes the efficiency of a single chamber tank.

It consists of a simple rectangular box of masonry, accessible from the top. The sewer enters on one side and two or three lines of disposal pipe are laid outward from it. A gate, or gates consisting of upright, six inch plank are used to close the lines temporarily out of use, leaving a single line open. Expansion bolts are bedded in the masonry and hold the gate in place, so that it can be slid up or down.

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LaSalle, N. Y. Dec. 12, 1918

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AMERICAN BUILDER, Chicago

Short Talks With Our Subscribers

THE big objective in Europe now is reconstruction. The big objective in the United States is construction—construction of buildings.



OWNERS of parrots assert that these birds have been shedding their down during January, this being indicative of an early spring. This happy condition will be welcomed with satisfaction by the building industry.



SHOE-STRINGS that cost 5 cents two years and 10 cents a year ago, now are 15 cents, an increase of 200 per cent. Cost of building in two years showed no such jump as this. One is as necessary as the other. Shall we forego either of these necessities?



"BUILD a Building" means building a bank account. Push the former and the latter will push itself.



WORKERS can't live without buildings; builders couldn't live unless workers needed buildings. Truly our social fabric is closely woven.



THE boys in the building trades are coming home better physically because of their army training. The men in one regiment just back from France gained an average of 10 pounds in weight. The boss will have to hustle to keep up with them.



HAVE you been fortunate enough to see the doughy boys wield their bayonets in practice? What they will do with shovels will be astonishing.

YEAR ago the clay products manufacturers were restricted to one-half and less of their normal production by the United States Fuel Administration. Now their production is only restricted by the capacity of their plants. At that, the demand will only be limited by the supply.



ONCE there was a builder who believed that contracts should come to him, not that he should go after contracts. He's dead—starved to death. His competitor had the opposite belief. That's "him," driving that big car up to his home, the finest in town.



THE building industry never faced a spring that promised more activity. If you don't get your share of the business, you'll know whom to blame.



DON'T be afraid of competition. You'll get just as much of the work your business rival creates as he will of the work you create. Competition starts things, then we all profit. For instance, every new building put up in your community is an advertisement for building. It arouses in the neighbors a desire to build, creates competition. Just shake the tree, but be sure you get a place underneath when the fruit begins to drop.



THE steel manufacturers now will have to obey the biblical injunction to beat the swords into plowshares. However, their activities also will extend to the tools and materials we use.

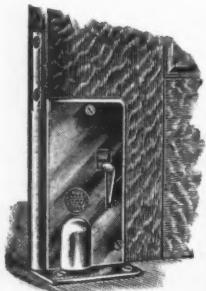
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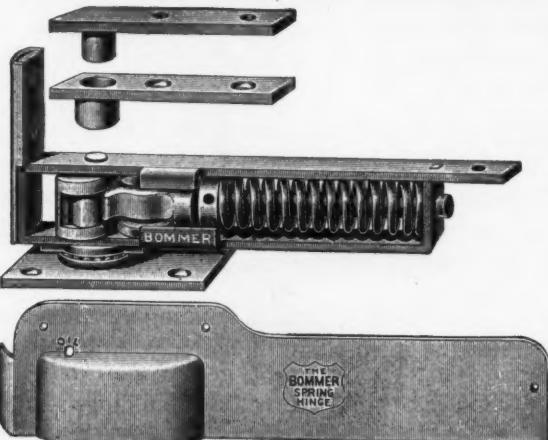


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